

From DEPARTMENT OF CLINICAL NEUROSCIENCE
Karolinska Institutet, Stockholm, Sweden

MOTIVATIONAL INTERVIEWING IN SMOKING CESSATION: EFFECTIVENESS, ACTIVE COMPONENTS, AND ACQUISITION OF COUNSELLOR SKILLS

Helena Lindqvist



**Karolinska
Institutet**

Stockholm 2016

All previously published papers were reproduced with permission from the publisher.

Published by Karolinska Institutet.

Printed by AJ E-print AB 2016

© Helena Lindqvist, 2016

ISBN 978-91-7676-356-8

Motivational Interviewing in Smoking Cessation: Effectiveness, Active components, and Acquisition of Counsellor Skills

THESIS FOR DOCTORAL DEGREE (Ph.D.)

By

Helena Lindqvist

Principal Supervisor:

Dr. Lars Forsberg
MIC Lab AB

Co-supervisor(s):

Dr. Ingvar Rosendahl
Karolinska Institutet
Department of Clinical Neuroscience

Dr. Pia Enebrink
Karolinska Institutet
Department of Clinical Neuroscience

Prof. Gerhard Andersson
Karolinska Institutet
Department of Clinical Neuroscience

Opponent:

Assoc. Prof. Theresa Moyers
University of New Mexico
Department of Psychology

Examination Board:

Prof. Sven Andréasson
Karolinska Institutet
Department of Public Health Sciences

Prof. Agneta Öjehagen
Lunds Universitet
Department of Clinical Sciences

Assoc. Prof. Anette Søgaaard Nielsen
Syddansk Universitet
Klinisk Institut

To Ebba, Mattias, and Ingo

ABSTRACT

Aim: The overall aims of the present thesis are to investigate the effectiveness and active components of Motivational Interviewing (MI) in telephone-based smoking cessation treatment, and to explore the acquisition of MI skills of smoking cessation counsellors.

Method: The setting of all included studies was the Swedish National Tobacco Quitline (SNTQ). In evaluating the effectiveness of MI (Study I), clients calling the SNTQ between September 2005 and October 2006 were allocated to receive either treatment as usual (TAU) or TAU with added MI. The primary outcome measures were self-reported 7-day point prevalence abstinence and 6-month continuous abstinence at 12-month follow-up. To examine the predictive power of the hypothesised active MI components (Study II and III), 106 audio-recorded treatment sessions were analysed using the Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) Coder's manual and the Motivational Interviewing Treatment Integrity (MITI) manual, version 3.1. The SNTQ counsellors' acquisition and retention of MI skills (Study IV) were assessed using the MITI manual, version 3.0, over 11 assessment periods at fixed intervals over two and a half years (September 2004 to February 2007).

Results: At 12-month follow-up, 19% of the clients allocated to MI-trained counsellors reported 6-month continuous abstinence, versus 14% of the TAU clients (odds ratio [OR] 1.48, 95% confidence interval [CI] 1.00–2.19; $p < .05$). The counsellors' relational skills (demonstrating MI spirit) were positively associated with smoking outcome among unmotivated SNTQ clients (i.e., clients not expressing Activation utterances favouring change). The counsellors' technical MI skills (e.g., questions and reflections favouring change) were associated with in-session client language, while in-session client language was, in turn, found to predict smoking outcome. For each expressed Activation utterance favouring abstinence, clients were 73% more likely to stop smoking (OR 1.73, 95% CI 1.08–2.76, $p < .05$). Conversely, for each expressed Desire or Need utterance favouring continued smoking, clients were 80% less likely to stop smoking (OR 0.20, 95% CI 0.04; 0.97, $p < .05$). Mediation analysis also revealed that this client language mediated the relationship between counsellors' reflections favouring continued smoking and smoking status at follow-up. In Study IV, we observed notable smoking cessation counsellor difficulties in acquiring MI skill as well as great variation in MI skill between counsellors and in counsellor performance over time.

Conclusions: Integrating MI into a cognitive behavioural therapy-based smoking cessation protocol in an ordinary clinical setting increased clients' 6-month continuous abstinence rates by 5%. Consistent with MI theory, the findings suggest that smoking cessation counsellors should cultivate client Activation utterances favouring abstinence and soften client utterances expressing Desire or perceived Need to smoke in order to contribute to higher rates of treatment success. However, MI implementation was only partly successful, despite an extensive MI training, including continual supervision and systematic feedback on counsellors' clinical practice.

LIST OF SCIENTIFIC PAPERS

This thesis is based on the following papers, which are referred to in the text by their roman numerals (I-IV).

- I. Lindqvist, H., Forsberg, L. G., Forsberg, L., Rosendahl, I., Enebrink, P., & Helgason, A. R. (2013). Motivational interviewing in an ordinary clinical setting: a controlled clinical trial at the Swedish National Tobacco Quitline. *Addict Behav*, 38(7), 2321-2324.
- II. Lindqvist, H., Forsberg, L., Enebrink, P., Andersson, G., & Rosendahl, I. (2016). Relational skills and client language predict outcome in smoking cessation treatment. *Subst Use Misuse*. Advance online publication. doi: 10.1080/10826084.2016.1212892
- III. Lindqvist, H., Forsberg, L., Enebrink, P., Andersson, G., & Rosendahl, I. The relationship between counsellors' technical skills, clients' in-session verbal responses, and outcome in smoking cessation treatment. (Submitted)
- IV. Forsberg, L., Forsberg, L. G., Lindqvist, H., & Helgason, A. R. (2010). Clinician acquisition and retention of Motivational Interviewing skills: a two-and-a-half-year exploratory study. *Subst Abuse Treat Prev Policy*, 5, 8.

CONTENTS

1	Introduction	1
1.1	Smoking as a global health problem	1
1.2	Smoking prevalence in Sweden	1
1.3	Smoking cessation interventions.....	1
1.3.1	Telephone-based smoking cessation “quitlines”	2
1.3.2	Predictors of successful quitting	2
1.4	Motivational Interviewing.....	3
1.4.1	Core concepts in MI.....	3
1.4.2	Evaluation of MI fidelity	5
1.4.3	MI training.....	5
1.4.4	Outcome research into MI in smoking cessation treatment.....	6
1.4.5	Active components of MI	7
2	Aim	10
2.1	Study I.....	10
2.2	Study II	10
2.3	Study III.....	10
2.4	Study IV	11
3	Methods	12
3.1	Study setting	12
3.2	SNTQ counsellors	13
3.3	Allocation of counsellors	13
3.4	Training of TAU counsellors	13
3.5	Training of MI counsellors.....	14
3.6	Allocation of clients	14
3.7	Recruitment of clients and data collection procedures.....	15
3.8	Audio-recording of treatment sessions	15
3.9	Included sample.....	15
3.10	Measures	18
3.10.1	The SNTQ questionnaires.....	18
3.10.2	The MITI manual	18
3.10.3	The MI-SCOPE manual.....	19
3.11	Data analysis plan.....	23
3.11.1	Study I	23
3.11.2	Study II	23
3.11.3	Study III.....	23
3.11.4	Study IV.....	26
3.12	Ethical considerations.....	26

4	Results.....	27
4.1	Study retention and attrition analyses	27
4.2	Treatment dose	27
4.3	Treatment fidelity measured by the MITI	27
4.4	Effectiveness of MI in smoking cessation treatment.....	28
4.5	Active components of MI in smoking cessation treatment	28
4.5.1	The relational component	28
4.5.2	The technical component	29
4.5.3	Acquisition and retention of MI skills	31
5	Discussion.....	33
5.1	MI enhances smoking cessation treatment.....	33
5.2	Hypothesised active MI components predict smoking outcome	33
5.3	The implementation of MI did not succeed - Or did it?.....	34
5.4	Does high MI spirit stifle already motivated clients desire to change?	35
5.5	Is more reflective listening always a good thing?	36
5.6	Does the predictive value of client language depend on the treatment setting?	36
5.7	Should reflections of CT be avoided?.....	37
5.8	Methodological considerations	38
5.8.1	Construct validity	38
5.8.2	Internal validity	38
5.8.3	External validity	39
5.9	Conclusions and implications for practice.....	41
6	Acknowledgment	43
7	References	45
8	Appendix A	53
8.1	Baseline questionnaire.....	54
9	Appendix B.....	62
9.1	12-month follow-up questionnaire.....	63

LIST OF ABBREVIATIONS

ACT	Activation
BP	Beginning Proficiency
CBT	Cognitive Behavioural Therapy
CI	Confidence interval
CT	Change talk
D/N	Desire/Need
F/A	Follow/Neutral and Ask
IQR	Interquartile range
MI	Motivational Interviewing
MICO	MI-consistent behaviours
MISC	Motivational Interviewing Skills Code
MIIN	MI-inconsistent behaviours
MI-SCOPE	Motivational Interviewing Sequential Code for Observing Process Exchanges
MITI	Motivational Interviewing Treatment Integrity
NRT	Nicotine-replacement therapies
OARS	Open questions, Affirming, Reflecting, and Summarising
OR	Odds ratio
OTHER-C	Other counsellor behaviours
QNEG	Negative questions
QNEUT	Neutral questions
QPOS	Positive questions
RCT	Reflections of change talk
REF+/-	Double-sided reflections
RNEUT	Reflections of neutral talk
RR	Risk ratio
RST	Reflections of sustain talk
SNTQ	The Swedish National Tobacco Quitline

ST	Sustain talk
TAU	Treatment as usual
TP	Transition probability
WHO	World Health Organization

1 INTRODUCTION

1.1 SMOKING AS A GLOBAL HEALTH PROBLEM

Smoking is a major threat to public health (Ezzati, Lopez, Rodgers, Vander Hoorn, & Murray, 2002; World Health Organization [WHO], 2013), being directly linked to around 40 different diseases (Doll, Peto, Wheatley, Gray, & Sutherland, 1994). The WHO estimates that over 1.1 billion people smoked tobacco in 2015. Each year smoking accounts for about six million deaths worldwide, including those of 600 000 non-smokers exposed to second-hand smoke (WHO, 2016). Encouraging smoking cessation is crucial to reducing future risks of morbidity and mortality (Mathers & Loncar, 2006).

1.2 SMOKING PREVALENCE IN SWEDEN

Smoking rates among both men and women are slowly declining in most developed countries (Thun, Peto, Boreham, & Lopez, 2012). However, declining smoking rates are not equally distributed among all demographic or socioeconomic groups (Hosseinpoor, Parker, Tursan d'Espaignet, & Chatterji, 2011). The prevalence of smoking today is often highest among disadvantaged groups and among those of low socioeconomic status (Hiscock, Bauld, Amos, Fidler, & Munafo, 2012; Hosseinpoor, et al., 2011).

In 2015, the prevalence of daily smoking in Sweden was 10%, with slightly more women than men smoking (11% vs. 9%). Being a daily smoker in Sweden was more common among people aged 45–65 years (13%) than among those aged 30–44 years (7%), more common among people with only compulsory education (14%) than among people with post-secondary education (5%), and more common among the unemployed or people receiving sickness or activity compensation (21% and 22%, respectively) than among the working population (9%) (Public Health Agency of Sweden, 2015).

Smoking-related diseases account for about one-tenth of all deaths in Sweden each year (The National Board of Health and Welfare, 2014) and the smoking-related cost to society in Sweden was estimated to be SEK 26 billion in 2001, mostly caused by temporary illness from smoking-related diseases (Bolin & Lindgren, 2004).

1.3 SMOKING CESSATION INTERVENTIONS

Despite widespread awareness of the harms of smoking, people continue to smoke due to the difficulty of quitting. Behavioural support (e.g., brief advice and counselling) and medications (e.g., nicotine-replacement therapies - NRT, varenicline, and bupropion) can significantly increase the odds of quitting (Lancaster & Stead, 2005; Stead, Koilpillai, Fanshawe, & Lancaster, 2016). Clinical practice guidelines recommend combining behavioural support and medication to enhance treatment effect (Fiore, Jaén, & Baker, 2008).

1.3.1 Telephone-based smoking cessation “quitlines”

One way to help smokers quit smoking is to provide telephone-based smoking cessation services (“quitlines”). Quitlines have been established in many countries and have proven to be both effective and cost-effective (Stead, Hartmann-Boyce, Perera, & Lancaster, 2013; Zhu et al., 2002). Quitlines have a broad reach, are accessible to populations commonly underserved by other programmes, and have been proven to be effective with diverse populations (Anderson & Zhu, 2007; Fiore, et al., 2008).

There are proactive quitline services in which smoking cessation providers call back on appointed dates and reactive quitline services in which clients initiate all contact. In a systematic review from 2013, smoking abstinence rates were found to be higher for smokers who received multiple sessions of proactive counselling (Stead, et al., 2013). There is some evidence that multiple call-backs have a dose-response effect, but little evidence of differences among counselling methods or materials (Fiore, et al., 2008; Stead, et al., 2013).

1.3.1.1 The Swedish National Tobacco Quitline

The Swedish National Tobacco Quitline (SNTQ) is a nationwide free-of-charge service operated by the Stockholm County Council Health Service and funded mainly by the Swedish government. Since the SNTQ started in 1998, its treatment protocol has been continuously developed and improved by the ongoing evaluation and adoption of new research findings (e.g., Helgason et al., 2004; Nohlert, Ohrvik, & Helgason, 2014, 2016; Tomson, Helgason, & Gilljam, 2004). In contrast to a number of international studies finding that proactive call-back services are more effective (Stead, et al., 2013), a randomised trial at the SNTQ found that proactive and reactive services were equally effective (Nohlert, et al., 2014).

The SNTQ, which today responds to about 10,000 calls per year, of which about 6000 are “treatment calls” (Helgeson & Post, 2013), has been found to be a cost-effective public health intervention (Tomson, et al., 2004; Åström, et al., 2015).

1.3.2 Predictors of successful quitting

Variables commonly reported to be associated with quitting attempts and/or successful quitting include, high motivation, high self-efficacy, low nicotine dependence, high socioeconomic status, previous quitting attempts, higher education, living with a spouse or partner, social support, and older age (Federico, Costa, & Kunst, 2007; Ferguson, Bauld, Chesterman, & Judge, 2005; Fiore, et al., 2008; Gwaltney, Metrik, Kahler, & Shiffman, 2009; Kaplan, Keeley, Engel, Emsermann, & Brody, 2013; Osler & Prescott, 1998; Vangeli, Stapleton, Smit, Borland, & West, 2011).

1.3.2.1 Predictors of successful quitting at SNTQ

To be smoke-free at baseline has been found to be the strongest predictor of both 7-day point prevalence abstinence and 6-month continuous abstinence at SNTQ (Helgason, et al., 2004; Nohlert, et al., 2014). High self-rated ability to handle stress and depressive mood without smoking has also been found to predict both outcome measures at follow-up (Nohlert, et al., 2014).

Variables found to be associated with 7-day point prevalence abstinence are: a high level of client satisfaction with the counsellor at the first call, support from a health care professional, social support, use of NRT for five weeks or more, exposure to second-hand smoke, and female gender (Helgason, et al., 2004; Nohlert, et al., 2014).

Variables found to be associated with 6-month continuous abstinence are: high self-rated probability of being smoke free in 1 year, and not using NRT in the week before follow-up (Nohlert, et al., 2014).

1.4 MOTIVATIONAL INTERVIEWING

Motivational Interviewing (MI) is a counselling approach designed to enhance inherent client motivation to change a specific targeted behaviour, such as tobacco smoking. MI was first introduced by William R. Miller in the early 1980s (Miller, 1983) and was later more exhaustively described by Miller and Steven Rollnick in 1991 (Rollnick & Miller, 1995). MI was originally developed in the field of addictions counselling but has over time come to be applied to other problematic lifestyle behaviours. The originators, Miller and Rollnick, continue to refine and revise the concepts and language used to describe the method. The most recent definition of MI is as follows:

Motivational interviewing is a collaborative, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of acceptance and compassion. (Miller & Rollnick, 2013, p. 29)

1.4.1 Core concepts in MI

1.4.1.1 The spirit of MI

The underlying spirit of MI consists of four key components (Miller & Rollnick, 2013):

Partnership – The counsellor avoids the expert role and instead collaborates with the client.

Acceptance – The counsellor respects the client's *absolute worth*, shows *empathy* to seek an understanding of the client's perspective, *supports autonomy*, and *affirms* the client's efforts and strengths.

Compassion – The counsellor prioritises the client's needs and actively promotes his/her welfare.

Evocation – The counsellor evokes rather than seeks to create the client's motivation to change.

1.4.1.2 *Communication skills in MI*

Five core communication skills are strategically used throughout an MI session: **O**pen questions, **A**ffirming, **R**eflecting, **S**ummarising (OARS), and **I**nforming and advising. These core skills are not unique to MI, but are shared with person-centred approaches and many other forms of counselling (Miller & Rollnick, 2013).

1.4.1.3 *The four processes of MI*

MI was previously described (Miller & Rollnick, 1991, 2002) as taking place in two fairly distinct phases, phase 1 comprising the process of evoking the client's motivation for change, and phase 2 focusing on eliciting commitment and planning for change. The most recent description of the process that unfolds during an MI session instead emphasises four processes: engaging, focusing, evoking, and planning (Miller & Rollnick, 2013).

The MI counselling session begins with an *engaging* process to form a helpful working relationship. This is crucial to the spirit of the MI relationship, as effective counselling cannot occur without a working relationship according to MI. The process of *focusing* is the next aim and can be described as developing and maintaining “a specific direction in the conversation about change” (Miller & Rollnick, 2013, p. 27). In the focusing process the counsellor helps the client identify a target area about which s/he is ambivalent to or struggling with in order to make a change. Once the target area has been identified and established, the *evoking* process begins. In this process the counsellor elicits natural language about change based on the client's own values, interests, and attitudes so that the client talks her/himself into change. A reflective listening is fundamental in that it permits the counsellor to select and reflect certain aspects of the client's language. After the evoking process, the *planning* process begins. Planning involves both establishing a commitment to change and developing a specific change plan (Miller & Rollnick, 2013).

One process does not end when the subsequent process begins. On the contrary, “each later process builds upon those that were laid down before and continue to run beneath it as a foundation” (Miller & Rollnick, 2013, p. 26). The processes are overlapping and self-repeating. Counsellors may move in and out of the four processes, even having a conversation that covers several processes at the same time (Miller & Rollnick, 2013). The four processes do, however, provide direction to the flow of the MI session. The counsellor uses the five core communication skills throughout all four processes and the underlying spirit of MI is always present (Miller & Rollnick, 2013).

1.4.2 Evaluation of MI fidelity

MI counsellors' own self-assessments of MI skills have been found to be unreliable (e.g., Miller, et al., 2004; Wain, et al., 2015). Fortunately, several treatment integrity instruments have been developed to objectively measure MI skills (e.g., Campinez Navarro et al., 2016; Doll, et al., 1994; Lane et al., 2005; Madson & Campbell, 2006).

One early instrument was the Motivational Interviewing Skills Code (MISC) (Miller, 2000). The MISC consists of more than 30 variables and measures both counsellor and client in-session behaviours as well as the interactions between them. Further efforts led to the development of a less time-consuming and simpler instrument, the Motivational Interviewing Treatment Integrity (MITI) manual (Moyers, Martin, Manuel, Hendrickson, & Miller, 2005). The MITI was developed by reducing data from the more extensive MISC coding system and measures counsellor behaviour only. The MITI manual has been found to have good discriminatory validity for counsellor behaviour and has proven to be a reliable tool for evaluating the use of MI (e.g., Forsberg, Berman, Kallmen, Hermansson, & Helgason, 2008; Forsberg, Kallmen, Hermansson, Berman, & Helgason, 2007; Moyers, et al., 2005). The MITI manual has been continuously revised and updated, and is the most used instrument to evaluate MI fidelity (Moyers, Rowell, Manuel, Ernst, & Houck, 2016). The latest version of the MITI manual, version 4.2.1, was introduced in 2015 (Moyers, Manuel, & Ernst, 2015).

The Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) Coder's manual (Martin, Moyers, Houck, Christopher, & Miller, 2005) has been recommended for use when detailed information about the process in MI sessions is desired (Dobber et al., 2015; Martin, et al., 2005). MI-SCOPE adapts and combines two other coding systems, the MISC (Miller, 2000), and the Commitment Language Coding System developed by Amrhein (2000) (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003), and measures both client and counsellor in-session verbal behaviours. The MI-SCOPE has been found to have predictive validity and acceptable inter-rater reliability scores (e.g., Martin, Christopher, Houck, & Moyers, 2011; Moyers, Martin, Houck, Christopher, & Tonigan, 2009).

1.4.3 MI training

The efficacy of MI, like that of all other evidence-based counselling interventions, relies on counsellors skills. As MI is continually applied to new settings and tested on different problems, the demand for MI training is ever increasing (Madson, Loignon, & Lane, 2009; Rubak, Sandbaek, Lauritzen, & Christensen, 2005).

MI training often comprises a two to four-day workshop. Short lectures are interspersed with video demonstrations and exercises in which participants can practice specific MI skills (Madson et al., 2009). Meta-analyses and reviews (Barwick, Bennett, Johnson, McGowan, & Moore, 2012; de Roten, Zimmermann, Ortega, & Despland, 2013; Madson, et al., 2009; Schwalbe, Oh, & Zweben, 2014; Soderlund, Madson, Rubak, & Nilsen, 2011) of MI training have demonstrated that counsellors improve their MI skills after these initial workshops. However, the newly acquired MI skills are not maintained over time without post-workshop activities (Miller & Mount, 2001; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004). A recent meta-analysis of MI training studies found that the addition of three to four post-

workshop feedback sessions over a six-month period was sufficient to sustain workshop training effects (Schwalbe et al., 2014).

As few training studies use follow-up periods greater than six months (Schwalbe et al., 2014), it is still unclear how people acquire and retain MI skills over a long period of time.

1.4.4 Outcome research into MI in smoking cessation treatment

Meta-analyses of clinical trials have found MI to be efficacious in various settings and applicable to a wide variety of problem behaviours, including drinking, drug use, gambling, and diet and exercise (Lundahl & Burke, 2009; Martins & McNeil, 2009). When MI is used as a prelude to other treatments, outcomes appear to have greater longevity and be more steadfast compared to when used as a standalone treatment (Hettema, Steele, & Miller, 2005; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010).

Research into the efficacy of MI in smoking cessation counselling has reported significant effects with modest effect sizes (Lindson-Hawley et al., 2015; Lundahl et al., 2009; Heckman et al., 2010; Hettema, et al., 2010). A recent Cochrane Review comparing MI with brief advice and usual care for smoking cessation reported a modestly significant effect (risk ratio [RR] 1.26; 95% confidence interval [CI] 1.16-1.36) (Lindson-Hawley et al., 2015). A subgroup analysis in the meta-analysis by Hettema, et al., (2010) found MI to be particularly effective for adolescents, for individuals with medical comorbidities, low tobacco dependence, and low motivation to quit, when applied for a total of less than one hour, and when the MI protocol includes training or fidelity practices (Hettema, et al., 2010). In contrast to this meta-analysis, the Cochrane Review (2015) did not find that baseline motivation moderated the effect of MI (Lindson-Hawley et al., 2015).

In most smoking cessation studies, MI has been combined with another intervention and then compared with some kind of control condition (e.g. brief advice plus some written materials). Thus, studies have not been designed to gauge the effect of the added MI component alone (Heckman, et al., 2010). We do not know whether the higher abstinence rates in the MI conditions were attributable to the MI component, to an active component of the other intervention with which MI was combined, or simply to a higher-intensity intervention than that received by the control group (Heckman et al., 2010; Lai et al., 2010; Lindson-Hawley et al., 2015). The authors of the Cochrane Review suggest that future research should compare interventions of equal intensity but different techniques, to test the specific effects of the MI component (Lai, et al., 2010; Lindson-Hawley et al., 2015).

In addition, few studies evaluating MI effectiveness in smoking cessation treatment use validated instruments to measure adherence to MI (Lai, et al., 2010; Lindson-Hawley et al., 2015). Based on this absence of information about the degree of treatment integrity and on the fact that the effect of MI in smoking cessation treatment has been shown to be modest in meta-analyses and systematic reviews, Hettema and Hendricks (2010) have highlighted the possibility that MI providers may be less likely to use the active components of MI in smoking cessation treatment applications. They have also discussed the possibility that in some studies the providers of smoking cessation treatment in the control group may have implemented some of the active components of MI (Hettema & Hendricks, 2010), rendering

comparisons against active MI less reliable. Thus, more research is therefore needed to assess the effectiveness of MI in smoking cessation treatment.

1.4.5 Active components of MI

Research investigating the active components of MI is consistently growing. This enhanced knowledge regarding these active components will clarify what MI strategies to emphasise in MI treatment, in quality assurance of MI practice, and in MI training (Miller & Rollnick, 2014). MI's active components have been described as a combination of *relational and technical components* (Miller & Rose, 2009).

1.4.5.1 The relational component

The relational component refers to the counsellor's demonstration of certain relational skills such as accurate empathy and the underlying spirit of MI. Behaviour change is assumed to occur if these relational skills are present in a session (Miller & Rose, 2009). The efficacy of the relational component has some empirical support in MI research (e.g., Gaume, Gmel, & Daeppen, 2008; Kaplan, et al., 2013; McCambridge, Day, Thomas, & Strang, 2011), and counsellor empathy has been found to be associated with positive client outcomes in several other interventions as well (Elliott, Bohart, Watson, & Greenberg, 2011; Moyers & Miller, 2013).

1.4.5.2 The technical component

The technical component refers to counsellors' skilled use of MI techniques, which is hypothesised to increase client language favouring change (change talk), and decrease clients' in-session language favouring status quo (sustain talk). High levels of change talk (CT) and low levels of sustain talk (ST) are therefore expected to result in positive outcomes (Miller & Rose, 2009).

The relationship between counsellor technical skills and client language (i.e. the *a* path in a mediational model), as well as the relationship between client language and outcome (i.e. the *b* path) have been examined in several studies (Magill et al., 2014). However, only five studies have investigated the mediational effect (i.e. indirect effect; $a*b$) of client language between counsellors' technical skills and outcome in one model (Barnett et al., 2014; Gaume et al., 2016; Moyers, Martin, Houck, et al., 2009; Pirlott, Kisbu-Sakarya, Defrancesco, Elliot, & Mackinnon, 2012; Vader, Walters, Prabhu, Houck, & Field, 2010). In most of these studies, MI technical skills have been represented by a frequency count of MI-consistent behaviours (MICO), such as affirming, supporting or affirming client autonomy, reflecting client utterances, and asking open-ended questions, while CT has served as mediator.

Moyers et al. (2009) found MICO to be associated with CT frequency (path *a*), CT frequency to be associated with the client drinking outcome (path *b*), and CT to mediate the relationship between MICO and the outcome. Vader et al. (2010) examined CT frequency as a mediator

between MICO and the client drinking outcome in two MI conditions (i.e., MI treatment with or without a feedback component). The *a* path was supported in both conditions, whereas the *b* path was supported only in the MI with feedback condition. CT did not, however, mediate the relationship in either condition. Pirlott et al. (2012) examined CT frequency as a mediator between MICO and increased fruit and vegetable consumption in clients. They found support for paths *a* and *b*, and found that CT mediated the relationship between MICO and outcome. Gaume et al. (2016) examined CT strength as a mediator between MICO and the client drinking outcome. In their study the *b* path was supported, but not the *a* path, and the strength of client CT did not mediate the relationship. However, in moderated mediation analyses, the authors found support for CT strength as mediating the relationship between MICO and the outcome among experienced MI counsellors treating participants with high alcohol severity. Finally, Barnett et al. (2014) examined CT percentage as a mediator between four MI technical skills and marijuana use outcomes. They found that CT percentage mediated the relationship between three of the four technical skills and the outcome. To sum up, four of five studies found some support for CT as mediating the relationship between counsellor technical skills and the outcome.

1.4.5.3 Active components of MI in smoking cessation treatment

There is a lack of research into the active components of MI in smoking cessation treatment (Bricker, 2010). To our knowledge, only three studies have analysed parts of the relational and/or technical components in smoking cessation treatment (Boardman, Catley, Grobe, Little, & Ahluwalia, 2006; Catley, 2006; Thyrian et al., 2007).

Counsellor relational skills have been found to predict positive in-session client behaviours and a better client–counsellor relationship in smoking cessation trials with adult smokers (Boardman, et al., 2006; Catley, 2006). Catley, et al., (2006) found overall MI style (a composite of counsellor acceptance, egalitarianism, warmth, genuineness, empathy, and overall adherence to the MI spirit) to be positively associated with in-session client behaviours (i.e., expression of affect, cooperation, disclosure, engagement, and more CT) (Catley, 2006). Boardman, et al., (2006) found overall MI style (a composite of counsellor empathy, egalitarianism and collaboration) to be positively associated with both working alliance and client engagement. Thyrian et al., (2010), however, did not find that the counsellors' overall MI style (a composite of counsellor empathy and demonstration of MI spirit) directly predicted smoking outcome at 6-month follow-up.

Catley et al., (2006) also analysed the *a* path of the technical component in smoking cessation treatment. They found the frequency of MICO to be positively and significantly associated with CT. MICO was not, however, found to be negatively associated with “resist-CT” language (including both ST and client resistance, e.g., interrupting). Nor did the authors find support for the MI-inconsistent (MIIN) utterances being associated with either CT or resist-CT. However, as discussed by the authors, the reliability of resist-CT and MIIN was low, which may have affected the results. In addition, the findings are correlational and we cannot be certain that a particular technical skill led to a particular client response. To gain more information, the *a* path in smoking cessation treatment should be investigated with sequential coded data. No previous study has analysed the *b* path of the technical component, and the whole technical component has never been investigated in one model.

More knowledge about the predictive power of counsellors' relational skills, as well as the predictive power of counsellors' technical skills through client language, among smokers is necessary to be able to further enhance the treatment effect in smoking cessation interventions.

2 AIM

The overall aims of the present thesis were to investigate the effectiveness and active components of MI in telephone-based smoking cessation treatment, and to explore smoking cessation counsellors' acquisition of MI skills.

The study-specific aims and hypotheses were as follows:

2.1 STUDY I

The aim was to assess the effect of adding MI to the existing treatment protocol for smoking cessation at SNTQ.

It was hypothesised that:

- the MI component would increase 7-day point prevalence abstinence and 6-month continuous abstinence at 12-month follow-up.

2.2 STUDY II

The aims were to assess to what extent counsellors' relational skills (i.e., MI spirit and Empathy) and specific client language predict behaviour change in smoking cessation treatment, and to examine whether there is a multiplicative interaction effect between relational skills and client language on subsequent smoking status.

It was hypothesised that:

- high relational skills would predict smoking abstinence;
- high frequency of CT utterances would predict smoking abstinence and, conversely, that high frequency of ST utterances would predict continued smoking; and
- if an interaction effect was present between relational skills and CT utterances, it would be positive and, conversely, if an interaction effect was present between relational skills and ST utterances, it would be negative.

2.3 STUDY III

The aims were to assess the probabilities that clients would respond with CT, ST, or follow/neutral or ask statements (F/A, i.e., neutral client talk unrelated to change of the target behaviour) immediately following different types of counselling techniques in smoking cessation treatment, to analyse whether these probabilities are affected by the counsellors' relational skills, to model the whole technical component within a mediational framework, and to test whether counsellors' relational skills moderate the mediational effects of client language.

It was hypothesised that:

- MICO, double-sided reflections, and questions and reflections favouring change would be more likely than expected by chance to be followed by CT, and less likely to be followed by ST or F/A;
- MIIN and questions and reflections favouring the status quo would be more likely than expected by chance to be followed by ST, and less likely to be followed by CT or F/A;
- neutral questions, reflections of neutral talk, and “Other” counsellor utterances would be more likely than expected by chance to be followed by F/A, and less likely to be followed by CT or ST;
- the above transition probabilities would not be affected by the counsellors’ relational skills;
- counsellor techniques would have an indirect effect on smoking outcome through CT and ST; and
- the indirect effect of counsellor techniques on smoking outcome through CT and ST would be conditional upon the level of the counsellors’ relational skills.

2.4 STUDY IV

The aims were to assess: a) the development of MI skills in counsellors over time, b) which MI skills were most and least easily acquired by counsellors, c) the time counsellors required to reach the recommended threshold for proficiency suggested in the MITI 3.0 manual, and d) the efficacy of training/supervision efforts used for the purpose of the study to maintain MI proficiency over time.

3 METHODS

An overview of the studies included in this thesis is presented in Table 1 and Figure 1. Studies I, II, and III had a confirmatory study design, whereas Study IV had an exploratory study design.

Table 1. Design, participants, data collection, and statistical analyses of the studies included in this thesis.

Study	Design	Participants	Data collection	Statistical analyses
I	Quasi-experimental, clinical controlled trial	Smokers ($n=772$)	Questionnaires, MITI ¹ -coded audio-recorded treatment sessions	Descriptive statistics, Logistic regression
II	Longitudinal, correlational study	Smokers ($n=106$)	Questionnaires, MITI ¹ - and MI-SCOPE ² -coded audio-recorded treatment sessions	Descriptive statistics, Logistic regression, Interaction analysis
III	Longitudinal, correlational study	Smokers ($n=106$)	Questionnaires, MITI ¹ - and MI-SCOPE ² -coded audio-recorded treatment sessions	Descriptive statistics, Sequential analysis, Mediation analysis
IV	Longitudinal, observational, descriptive study	Smoking cessation counsellors ($n=3$)	MITI ¹ -coded audio-recorded treatment sessions	Descriptive statistics

¹ Motivational Interviewing Treatment Integrity coding manual; ² Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) coding manual.

3.1 STUDY SETTING

The setting of all included studies was the Swedish National Tobacco Quitline (SNTQ). SNTQ is a nationwide free-of-charge service operated by Stockholm County Council and financed mainly by the Swedish government. SNTQ has been in operation since May 1998. During the study period (2004-2009), SNTQ operated three or four phone lines for approximately 50 hours per week, and clients were offered a choice between reactive treatment (clients initiate all contact with SNTQ) or a proactive treatment (SNTQ counsellors call back at appointed dates). In addition to telephone-based counselling, SNTQ callers (referred to as clients) are offered print information tailored to their particular needs. SNTQ does not, however, offer prescription services or discounts for over-the-counter NRT.

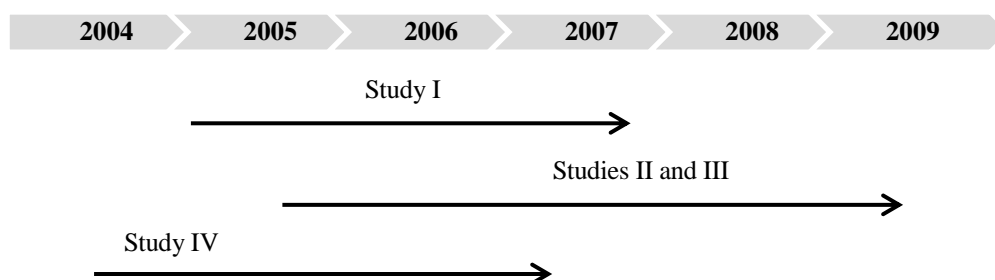


Figure 1. Timeline of the four SNTQ studies included in the thesis.

3.2 SNTQ COUNSELLORS

All SNTQ counsellors were trained health-care professionals (e.g., nurses, dentists, and health pedagogues) and had counselling experience before study commencement. Upon employment at SNTQ, all counsellors received about 30 days of training in tobacco cessation counselling distributed over 4–6 months. This training was based on a combination of coaching skills, pharmacological consultation, and cognitive behavioural therapy (CBT) techniques, including the employment of methods such as operant and classical conditioning and cognitive strategies.

3.3 ALLOCATION OF COUNSELLORS

In February 2005, 19 counsellors were employed at SNTQ. Of those, 17 counsellors participated in Study I (one was on maternity leave and one was working on an irregular basis). These 17 counsellors were assigned randomly (via coin flip) to the two treatment protocols: treatment as usual (TAU) and MI. However, as the SNTQ counsellors worked between three and 16 hours per week, randomising the counsellors to the treatment arms resulted in an uneven distribution of total working hours between the groups. Two counsellors allocated to the ST protocol both worked 16 hours per week. To achieve a more equal distribution of working hours between the two arms, the groups were adjusted, and one counsellor who worked 16 hours per week was randomly reallocated (via coin flip) to the MI protocol. In total, nine counsellors were allocated to ST and eight counsellors to MI.

In 2004 (baseline), there were no statistically significant differences in client cessation rates between SNTQ counsellors.

3.4 TRAINING OF TAU COUNSELLORS

The counsellors allocated to TAU underwent training (including lectures on CBT techniques) and supervision. Training and supervision totalled approximately 40 hours over the study period. In addition, TAU counsellors were offered group supervision on five occasions and had access to CBT-based individual supervision upon request. The additional training was

intended to improve the skill of TAU counsellors in providing the TAU protocol. Moreover, additional training for the TAU counsellors somewhat offset the extra attention that MI counsellors received as a result of MI training and supervision.

3.5 TRAINING OF MI COUNSELLORS

Counsellors allocated to MI underwent comprehensive MI training in February 2005. The training was developed and conducted by a Motivational Interviewing Network of Trainers practitioner and clinical psychologist with considerable experience of MI training in various settings. Initial MI training consisted of a two-day (12-hour) workshop comprising a mixture of didactics and practical exercises. The training followed MI principles (Miller & Rollnick, 2002), training counsellors to use accurate empathetic listening, avoid confrontation and unsolicited advice, carefully increase discrepancy between client long-term goals and status quo behaviour, support client self-efficacy, and support clients in exploring possible cessation strategies.

The workshop was followed by supervision in groups of four to five counsellors for three hours every fortnight for the first three months of the study period. For the rest of the study period, MI counsellors received supervision once a month. Supervision comprised a total of 84 hours during the study period. The supervision was based on feedback generated through the treatment integrity assessment of audio-recorded sessions from the counsellors' clinical practice. Treatment integrity was assessed using the MITI manual, version 2.0 (Moyers, et al., 2005).

In line with the recommendations of Miller and Rollnick (2014), the counsellors' MI skills were assessed both before the client recruitment period and during the clinical trial. The recruitment of clients to the study started in September 2005 when all MI counsellors had reached the recommended threshold for Beginning Proficiency (BP; see section 3.10.2) in the global variables in the MITI 2.0 manual at least once (Moyers et al., 2005).

3.6 ALLOCATION OF CLIENTS

Formal randomisation of clients between treatment groups was not practicable given the real-life clinical setting. As an alternative, client allocation to treatment groups was determined by the client's first contact with an SNTQ counsellor, the client's first call being allocated to the first available counsellor. Whether this counsellor was TAU-trained or MI-trained determined which treatment arm the client would belong to for the duration of the study. Clients were thus non-selectively allocated to the treatment groups. Clients were also blinded as to which study group they belonged to. The two groups were monitored during the recruitment process to ascertain that they were equivalent at baseline (see Table 2 for baseline characteristics of the clients included in Study I).

Two MI-trained counsellors left SNTQ during the Study I recruitment period, resulting in reduced treatment capacity in the MI group. As a result, there was a greater probability that clients would initially be allocated to TAU. Of all clients participating in Study I, 62% were allocated to TAU and 38% to MI.

If a client called SNTQ more than once, subsequent calls were transferred to a counsellor in the same treatment group as the counsellor who had taken the first call, as far as this was possible. Some clients who had made their initial contact with an MI counsellor were instead allocated to a TAU counsellor, and vice versa. This happened when no counsellor in the initial treatment condition was available to take subsequent calls. Heavy workload was the principal reason for the unavailability of appropriate counsellors.

3.7 RECRUITMENT OF CLIENTS AND DATA COLLECTION PROCEDURES

During the study period, SNTQ had a system of ongoing evaluation of the tobacco cessation support it provided. SNTQ clients who showed interest in receiving tobacco cessation support, and orally consented to participate in the evaluation, were sent a postal baseline registration questionnaire. The purpose of the baseline questionnaire was to confirm client identity and to seek written informed consent to follow-up. Clients who did not return the baseline questionnaire received one reminder call and thereafter one reminder letter by post. Returning the baseline questionnaire was the criterion for inclusion in Studies I, II, and III. Twelve months after the initial contact with SNTQ, clients received a postal follow-up questionnaire. To minimise drop-out, clients who did not return their questionnaires received one reminder letter by post followed by a reminder call.

3.8 AUDIO-RECORDING OF TREATMENT SESSIONS

Clients who called SNTQ were informed that the call might be audio-recorded by the following pre-recorded message: “Welcome to the Swedish National Tobacco Quitline. Here you can receive smoking and snuff cessation support. This call may be recorded for quality and training purposes”. If someone did not want to be audio-recorded, the counsellor would not switch on the audio-recorder and the session would be performed as usual. Audacity software was used to audio-record the treatment sessions.

Only a subset of calls to SNTQ was audio-recorded. During the study period of the clinical trial, i.e., Study I, September 2005–October 2007, SNTQ counsellors were encouraged to audio-record the first three treatment sessions at six-week intervals (assessment periods); thereafter, i.e., October 2007–April 2008, audio-recording was more irregular.

Audio-recorded treatment sessions between September and December 2004 were used to assess counsellors’ MI skills at baseline.

3.9 INCLUDED SAMPLE

Study subjects for Studies I, II, and III were recruited among individuals who called SNTQ, whereas study subjects for Study IV were recruited among MI-trained SNTQ counsellors (see Table 2 for baseline characteristics).

Table 2. Baseline characteristics of participating SNTQ counsellors and clients.

	Study I		Studies II and III	Study IV
	TAU*	MI*		
SNTQ counsellors	<i>n</i> = 9	<i>n</i> = 8	<i>n</i> = 19	<i>n</i> = 3
Age years (mean, SD)	56 (11)	49 (11)	51 (10)	48 (14)
Gender (% female)	89	100	95	100
SNTQ clients	<i>n</i> = 476	<i>n</i> = 296	<i>n</i> = 106	
Age years (mean, SD)	48 (15) ^a	47 (15) ^b	51 (14)	
Gender (% female)	80	82	88	
Years of education (mean, SD)	12 (3) ^c	12 (3) ^d	11 (3) ^e	
Number of years smoked (mean, SD)	29 (14) ^f	28 (14) ^g	32 (14) ^h	
Cigarettes smoked at baseline (mean, SD)	16 (8) ⁱ	15 (9) ^j	16 (10) ^k	
Still smoking at first contact (%)	84	80	85	

TAU = Treatment as usual, MI = Motivational Interviewing, ^a 26 missing, ^b 19 missing, ^c 4 missing, ^d 7 missing, ^e 3 missing, ^f 5 missing, ^g 6 missing, ^h 4 missing; ⁱ 63 missing, ^j 59 missing; ^k 14 missing. * No statistical significant difference between MI and TAU clients.

The inclusion criteria for Study I were that clients should have their first treatment session between 1 September 2005 and 27 October 2006, show interest in receiving smoking cessation support, and complete the baseline registration questionnaire. During the recruitment period, total of 6903 people called SNTQ. Of these 6903 callers, 322 called to discuss a relative or friend's tobacco use, 366 called to order information materials, 315 sought supervision, 496 called to discuss their own snuff use, 255 were prank calls, and 941 were designated as mistaken or undefined calls. The remaining 4208 called to discuss their own smoking behaviour. Not all of these 4208 callers were asked to participate in the study, however. Most of the callers wanted to ask short practical questions, were not interested in receiving smoking cessation support, and were therefore not invited to participate in the study. Clients who had major difficulties understanding Swedish or who had apparent mental impairments were also not invited to participate. Some counsellors forgot or did not have time to invite clients. Some clients were invited to participate, but declined. In total, 1380 of these 4208 clients (33%) orally agreed to participate and were sent a baseline registration questionnaire. Of the TAU clients, 476/818 (58%) returned the baseline questionnaire, while 296/493 (60%) of MI clients returned the questionnaire ($p = 0.51$). In total, 772 clients returned the baseline questionnaire and constituted the study base. Of the TAU clients, 83/476 (17%) had at least one subsequent session with an MI counsellor during additional calls, whereas 47/296 (16%) of the MI clients had at least one subsequent call with a TAU counsellor (see Figure 2 for study flowchart).

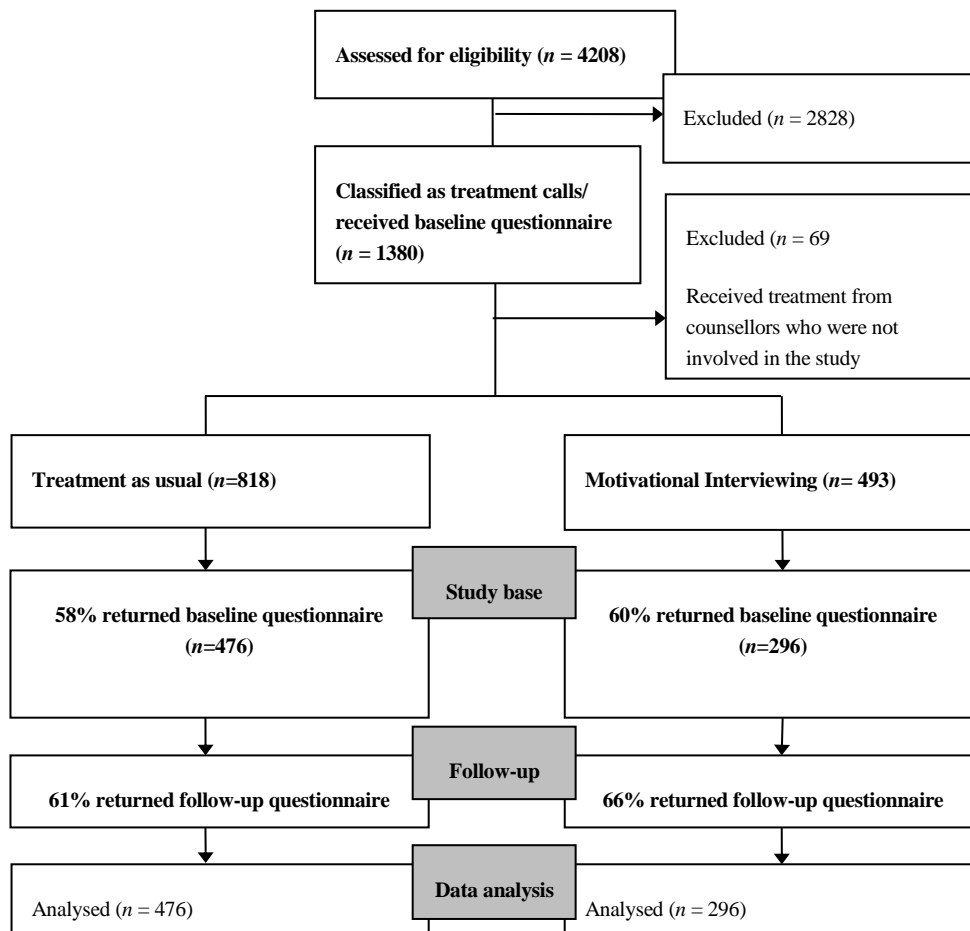


Figure 2. Flowchart of the controlled clinical trial at the Swedish National Tobacco Quitline (Study I).

The inclusion criteria for Studies II and III were as follows: The clients had to 1) show interest in receiving smoking cessation support, 2) have their first treatment session between September 2005 and April 2008, 3) complete the baseline registration and follow-up questionnaires, and 4) have their *first* treatment session audio-recorded. During the study period, 1501 clients showed interest in receiving smoking cessation support and complete the registration questionnaire. Of those 1501 clients, 160 (11%) had their first treatment session audio-recorded. Of those 160 clients, 107 (67%) completed the follow-up questionnaire. One of the 107 client sessions was excluded due to missing values on the outcome measures. Consequently, a sample of 106 clients constitutes the study base in Studies II and III.

MI-trained SNTQ counsellors who had three or more audio-recorded treatment sessions for each of the 11 assessment periods from 2004 to 2007 were eligible for inclusion in Study IV. Three of the eight MI-trained counsellors met this criterion. Of the five excluded counsellors, one was excluded because she had other work assignments that did not allow for monitoring throughout the study period; the four remaining excluded counsellors had only one or two recorded treatment sessions from two or more assessment periods.

3.10 MEASURES

3.10.1 The SNTQ questionnaires

The baseline registration questionnaire (Appendix A) contained questions about client tobacco use and smoking behaviour. The follow-up questionnaire (Appendix B) contained questions about current tobacco use and about factors that might affect the client's ability to maintain abstinence, such as exposure to passive smoking and use of NRT. The baseline and follow-up questionnaires were developed and tested for face validity at the Centre for Tobacco Prevention in Stockholm.

3.10.1.1 Smoking outcome measure

The primary outcome measures were self-reported 7-day point-prevalence abstinence and 6-month continuous abstinence. Twelve months after initial contact with SNTQ, abstinence was assessed using the question "Have you had one puff of smoke or more within the past seven days?" (the third question in the follow-up questionnaire). Those clients who reported abstinence were also asked to answer an additional question, "How long have you been abstinent?", choosing the response from a fixed range of alternatives (the fourth question in the questionnaire). To be coded as 6-month continuously abstinent, clients had to select the option "I have been smoke-free for 6 to 12 months" or "I have been smoke-free for 12 months or more".

3.10.2 The MITI manual

To verify that the MI counsellors were delivering MI according to expectations during the clinical trial, sampled audio-recorded treatment sessions from the middle of the study period were assessed using the Swedish translation of the MITI 3.0 manual (Moyers, Martin, Manuel, Miller, & Ernst, 2007). The MITI 3.0 manual was also used to assess the development over time of MI skills in counsellors in Study IV. To assess counsellors' relational skills in Studies II and III, the Swedish translation of the updated MITI 3.1 manual (Moyers, Martin, Manuel, Miller, & Ernst, 2009) was used. The Swedish translated MITI manual (version 3.1) is available at <https://www.miclab.org/node/15>.

The MITI 3.0/3.1 manual has two sections. The first section measures global variables: MI Spirit (comprising three sub-variables: Evocation, Collaboration, and Autonomy Support), Empathy, and Direction. The global variables are rated on a five-point Likert scale, ranging from 1 (low) to 5 (high). The second section measures the frequency of particular verbal behaviours of counsellor, which are summarised in four indices: (1) *MI-Adherent Utterances* as a proportion of MI-Adherent plus MI Non-Adherent Utterances, (2) the ratio of *Reflections to Questions*, (3) *Open Questions* as a proportion of Open plus Closed Questions, and (4) *Complex Reflections* as a proportion of Simple plus Complex Reflections. For each of the global variables and behaviour frequency count indices, there are recommended thresholds for BP (see Table 3). These recommended thresholds are based on the expert opinion of the

University of New Mexico research group that developed the MITI instrument; the thresholds, however, need further empirical testing (Moyers, Martin, Manuel, et al., 2007, 2009).

Table. 3. MITI Beginning Proficiency thresholds in MITI 3.0/3.1 (Moyers, Martin, Manuel, et al., 2007, 2009).

Global score/ Frequency count indices	Beginning Proficiency threshold
Global clinician ratings	Average of 3.5
Ratio of Reflections to Questions	1
Open Questions as a proportion of Open plus Closed Questions	50%
Complex Reflections as a proportion of Simple plus Complex Reflections	40%
MI-Adherent as a proportion of MI-Adherent plus MI Non-Adherent Utterances	90%

MITI = Motivational Interviewing Treatment Integrity manual. * = In the MITI 2.0 manual, the global therapist variables are rated on a seven-point Likert scale (beginning proficiency = 5) (Moyers, et al., 2005).

To assess inter-rater reliability between the two coders who assessed all sessions according to MITI 3.0 in Studies I and IV, we calculated the intra-class correlation coefficient (ICC) based on 20 double-coded sessions. ICC was calculated using a two-way mixed model with absolute agreement for a single measure (ICC, 3.1) (Shrout & Fleiss, 1979) and was interpreted according to the recommendations of Cicchetti (1994): <0.40 as poor, 0.40–0.59 as fair, 0.60–0.74 as good, and 0.75–1.00 as excellent. The ICCs for all MITI variables ranged between good (0.69 for Direction) and excellent (0.98 for Open Questions and MI Non-Adherent utterances). The inter-rater reliabilities between the two coders who coded the global MITI 3.1 variables in the sessions included in Studies II and III are presented in Table 4.

3.10.3 The MI-SCOPE manual

The Swedish translation of the Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) Coder's Manual (Martin, et al., 2005) was used to assess counsellor technical skills and in-session client language in the 106 sessions included in Studies II and III.

MI-SCOPE coding requires both audio-recordings and transcripts. The target behaviour of the session must be clear beforehand, because client language and some of the counsellors' technical micro-skills are categorised as movements toward or away from this target behaviour. In this study the target was either to stop smoking or to maintain abstinence from cigarette smoking. MI-SCOPE coding is performed in two stages and gives a string of

sequential counsellor and client codes for each session. Three coders were involved in the first stage, which entails parsing the transcribed sessions into separate utterances; two of those coders were also involved in the second stage, which entails categorising each parsed counsellor and client utterance according to one of the MI-SCOPE coding categories.

MI-SCOPE contains 29 counsellor and 16 client codes. The counsellor codes fall into five main categories: *MI-consistent utterances* (Affirm, Emphasise Control, Permission seeking, and Support), *MI-inconsistent utterances* (Advice, Confront, Direct, Opinion, and Warn), *OTHER-C* (Feedback, Filler, Self-disclosure, General information, Structure, and Raise concern), *Questions* (Open Questions and Closed Questions), and *Reflections* (Simple Reflections and Complex Reflections). Questions are further subcategorised as positive (+), negative (-), or neutral (0), indicating whether a question is intended to evoke ST, CT, or F/A. Reflections are also further subcategorised as positive (+), negative (-), positive and negative (+/-), or neutral (0), indicating whether the counsellor reflects on CT, ST, both CT and ST, or F/A.

The client codes fall into three main categories: *Ask* (the client asks a question), *Follow/Neutral* (the client's utterances are unrelated to change of the target behaviour) or *Change language* (Desire, Ability, Reason, Need, Taking steps, Commitment and Other). The change language subcategories either reflect CT (+) or ST (-) (Martin et al., 2005). For example, "I want to quit smoking" would be categorised as a Desire utterance reflecting CT, i.e. Desire +.

In addition to these seven subcategories of *Change language* codes in MI-SCOPE, we added an additional code: Activation "+" or "-". Miller and Rollnick (2013) have described this type of client language as "words that indicate movement toward action, yet aren't quite a commitment to do it" (pp. 162), for example, "I'm ready to try nicotine-replacement therapy", or expressed favouring the status quo, for example, "I'm not willing to give up my morning smoke" (Miller & Rollnick, 2013). To clarify, each counsellor and client utterance in this sample was categorised according to one of the 47 categories (45 MI-SCOPE codes and two added client codes for Activation from the Swedish supplementary MI-SCOPE coding manual). The Swedish translated MI-SCOPE manual and the Swedish supplementary coding manual is available at <https://www.miclab.org/node/15>.

Table 4. Descriptive information and intra-class correlation coefficients for client and counsellor variables in the 106 sessions included in Studies II and III.

	Frequency	Median (IQR)	Range min. max.		ICC
MI-SCOPE client variables					
All CT +	2710	22 (18)*	2	135	0.99
Desire +	140	1 (2)*	0	13	0.89
Ability +	68	0 (1)*	0	15	0.97
Reason +	1031	7 (9)*	0	51	0.98
Need + ^a	44	0 (0)	0	6	0.56
Commitment +	153	1 (2)	0	7	0.92
Activation + ^a	50	0 (1)	0	5	0.38
Taking step +	164	1 (2)	0	10	0.61
Other +	1060	8 (9)*	0	56	0.82
All ST –	1153	8 (11)*	0	62	0.98
Desire -	24	0 (0)	0	4	0.69
Ability -	184	1 (2)	0	17	0.92
Reason -	587	4 (7)*	0	32	0.92
Need -	13	0 (0)	0	2	1
Commitment – ^b	1	0 (0)	0	1	-
Activation – ^b	0	0 (0)	0	0	-
Taking step – ^b	8	0 (0)	0	2	-
Other -	336	2 (3.25)*	0	19	0.62
<i>Desire/Need –</i>	37	0 (0)	0	5	0.81
All F/A	6398	54 (31)	13	167	0.99
MI-SCOPE counsellor variables					
MICO	717	5 (6)*	0	27	0.97
MIIN	938	6 (10)†	0	60	0.99
QPOS	146	1 (2)	0	6	0.93
QNEG	367	3 (3)	0	25	0.99
QNEUT	1561	14 (10)†	1	59	0.98
RCT	823	6 (10)*	0	50	0.98
RST	323	2 (3)*	0	18	0.94

RNEUT	1465	11 (12)*	0	48	0.97
REF+/-	58	0 (1)*	0	6	0.93
OTHER-C	3191	28 (17)	8	83	0.98

Global MITI variables

MI Spirit		2.33 (1.67)	1	4.33	0.92
Empathy		3 (1)	1	5	0.79

* = Significantly higher median in the MI sessions than in the TAU sessions ($p < .05$); † = Significantly lower median in the MI sessions than the TAU sessions ($p < .05$); IQR = Interquartile range; ICC = Intra-class correlations coefficient (<0.40 = poor, $0.40-0.59$ = fair, $0.60-0.74$ = good, and $0.75-1.00$ = excellent [Cicchetti, 1994]); CT = Change talk; ST = Sustain talk; F/A = Follow/neutral or ask statements by the client; MICO = MI-consistent behaviours; MIIN = MI-inconsistent behaviours; QPOS = Positive questions, i.e., questions evoking positive aspects of the target behaviour; QNEG = Negative questions, i.e., questions evoking negative aspects of the target behaviour; QNEUT = Neutral questions; RCT = Reflections of change talk; RST = Reflections of sustain talk; RNEUT = Reflections of neutral talk; REF+/- = Double-sided reflections; OTHER-C = All other counsellor utterances; ^a = Analysed for exploratory purposes despite inter-rater reliability problems; ^b = Variables not further analysed due to extremely low frequency. In the double-coded sample, none of the coders rated any utterances as corresponding to the ST subcategories Commitment or Activation, and only one of the coders found examples of the ST category Taking steps.

To assess the inter-rater reliability of utterance-to-utterance parsing, 24 transcribed sessions (22%) were randomly selected for double-parsing. The three persons (A, B, and C) involved in the parsing procedure were divided into three pairs: A-B, B-C, and C-A. The sessions were then randomly assigned for double-parsing to one of three pairs of coders (each pair double-parsed eight sessions). To calculate inter-rater reliability for parsing, we followed the suggestion of Bakeman and Gottman (1997) and coded all words that a coder considered to complete an utterance as “1” and all words considered not to complete an utterance as “0”. The inter-rater reliability was then calculated as the Cohen’s kappa coefficient and was interpreted according to the guidance from Fleiss (1981): <0.40 as poor agreement, $0.40-0.75$ as intermediate to good agreement, and >0.75 as excellent agreement. The average kappa across all three pairs was 0.91, with range of $0.84-0.95$, indicating excellent agreement (Fleiss, 1981).

To assess the inter-rater reliability of the MI-SCOPE coding, a random subsample of 23 (21%) transcribed and parsed sessions was double-coded by two coders. To examine categorical agreement between the two coders categorising each counsellor and client utterance according to one of the 47 MI-SCOPE categories, we calculated kappa coefficients. Agreement ranged between 0.65 and 0.98 ($M = 0.80$), indicating good to excellent agreement (Fleiss, 1981).

To assess the inter-rater reliability of the frequencies for each MI-SCOPE category of interest, we calculated ICCs. The ICCs for the MI-SCOPE codes analysed in Studies II and III ranged between good and excellent (Cicchetti, 1994), except for the CT subcategories Activation and Need where poor and fair reliabilities, respectively, were found (see Table 4).

3.11 DATA ANALYSIS PLAN

3.11.1 Study I

To assess the effect of adding MI to the existing treatment protocol for smoking cessation at SNTQ, logistic regression models were used to calculate odds ratios (ORs) with 95% CIs. Covariates that did not change the effect estimate more than 10% were not included in the logistic regression model.

First, an intention-to-treat analysis of all 772 clients who returned the baseline questionnaire was performed (non-responders were assumed still to be smoking at follow-up). Thereafter, a subgroup analysis including those clients who completed the follow-up questionnaire and had talked only to either MI counsellors or TAU counsellors was conducted. A two-level hierarchical analysis, with counsellors on the second level of the model and each telephone call on the first level, was also performed to examine the between- and within-counsellor effects on outcome.

All statistical tests were two sided, and *p*-values of 0.05 or less were considered statistically significant. Statistical analyses were performed using SPSS 19.0 and STATA IC, version 12.0.

3.11.2 Study II

To assess the extent to which relational skills (MITI-coded “MI Spirit” and “Empathy”) and specific client language (frequency of MI-SCOPE-coded client language) predict smoking status at the 12-month follow-up, logistic regression models with a robust variance estimator were used to calculate ORs with 95% CIs.

We also tested for an interaction effect between relational skills and client language on subsequent smoking status at follow-up. The interaction effect is on a multiplicative scale and was measured by including an interaction term (e.g., relational skill \times client language) in the regression model. The relational skill with the largest effect size and the client language variables that significantly predicted outcome were analysed.

All models in Study II were adjusted for possible confounding from smoking status at first contact (i.e., still smoking/smoke-free), length of first call (measured as frequency of all utterances), and number of calls to SNTQ. Statistical analyses were performed using SPSS 22.0 and STATA IC, version 14.0. All statistical tests were two sided, with *p*-values less than 0.05 considered statistically significant.

3.11.3 Study III

To assess the associations between counsellor utterances (first event) and what a client says subsequently (following event), we used the Generalized Sequential Querier (GSEQ)

software, version 5.1, by Bakeman and Quera (2009). We computed observed and expected frequencies as well as transition probabilities (TPs). We examined TPs at Lag 1 (i.e., the probability of, e.g., CT occurring immediately after a negative question) and all sessions were pooled in the analysis. We also calculated ORs with 95% CIs to assess the probability of, for example, CT occurring following a negative question, compared with the probability of CT occurring following any other counsellor behaviour (Bakeman & Quera, 2011).

To assess whether and how these probabilities were affected by the counsellors' relational skills, we divided the sessions into a low-MI Spirit group and a high-MI Spirit group and the analyses were computed separately for each. Thereafter, we analysed whether the ORs for the various transitions in the two groups differed statistically significantly from each other. For the groups to be approximately the same size, the low-MI Spirit group came to consist of sessions with MI Spirit MITI-rated as 1–2, and the high-MI Spirit group as all sessions rated 2.33 or above.

To compute reliable transition probabilities, “the minimum expected cell frequency should be at least 3, preferably 5, given chance” (Martin et al., 2005). The counsellor and client codes were therefore merged into broader categories. All counsellor variables were summarised into ten categories: MICO, MIIN, Positive questions, i.e., questions evoking positive aspects of the target behaviour (QPOS), Negative questions, i.e., questions evoking negative aspects of the target behaviour (QNEG), Neutral questions (QNEUT), Reflections of CT (RCT), Reflections of ST (RST), Double-sided reflections (REF+/-), Reflections of neutral talk (RNEUT), or “Other” counsellor behaviours (OTHER-C). All client variables were summarised into CT, ST, or F/A (Follow/Neutral and Ask). In the stratified analyses the counsellor variables were further reduced into nine codes (the REF+/- category was merged into the OTHER-C category).

3.11.3.1 Mediation analysis

To assess whether client language mediated the relationship between counsellor technical skills and smoking outcome, mediation analyses were carried out using the PROCESS macro (version 2.15) for SPSS (Hayes, 2013).

Based on model 4 in the PROCESS macro, we constructed a parallel mediation model in which the client language variables found to predict smoking outcome in Study II were included as mediators (M) between two independent variables (X, technical skills) and a dependent binary outcome variable (Y, smoking/smoke-free). The parallel mediation approach allowed us to assess the specific indirect effect of each hypothesised mediator adjusting for the other mediator. See Figure 3 for a graphical representation of our mediational model.

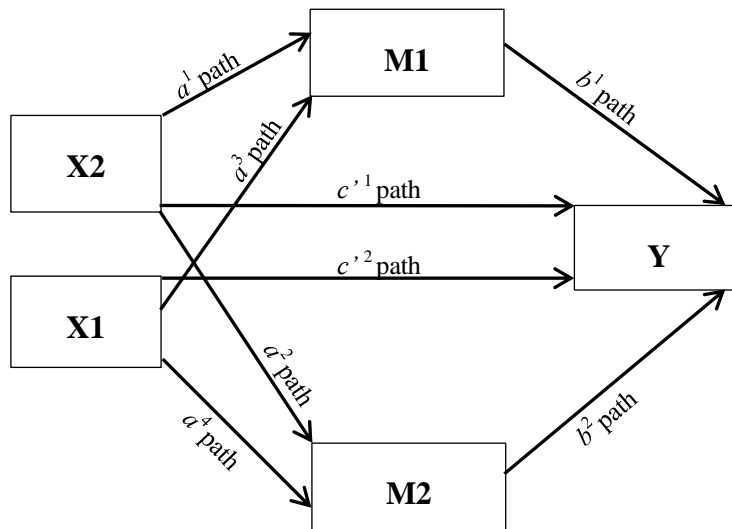


Figure 3. Graphical representation of a parallel mediator model. X = independent variable; M = mediator; Y = dependent variable. The effect of X on M is called the *a* path and the effect of M on Y (controlling for X) is called the *b* path. The amount of mediation is called the indirect effect and is estimated by multiplying the *a* and *b* path (*ab*). The effect of X on Y after controlling for M is called the direct effect (*c'*). The total effect of X on Y (*c*) is the sum of the indirect effect and the direct effect: $c = c' + ab^1$ (Hayes, 2013).

Moderated mediation analyses were also performed to assess whether relational skills (MI spirit) moderated the indirect effect of counsellors' technical skills on smoking outcome. Conditional indirect effects were estimated using PROCESS model 14 in which the moderator influences only the *b* paths (Hayes, 2013). As recommended by (Hayes, 2015) we used the 'index of moderated mediation' to test the equality of the conditional indirect effects across specified values of MI spirit (i.e. -1SD, Mean, and +1SD).

The PROCESS macro was run on IBM SPSS Statistics 23. Model coefficients as well as direct, indirect and total effects were presented in their unstandardised form, as suggested by Hayes (2013). In all models, we tested the significance of the indirect effects and of the indices of moderated mediation using nonparametric bootstrapping (Hayes, 2015). Bias-corrected bootstrap confidence intervals (based on 20 000 bootstrap samples in the present study) that did not contain zero represented significant effects. In all mediation models, we used the frequency count of client and counsellor utterances, and the sequential order was not taken into consideration. All models were adjusted for possible confounding from smoking status at first contact (i.e. still smoking/smoke-free), length of first call (measured as frequency of all utterances), and number of calls to the SNTQ.

¹ Note that the sum of the indirect and direct effects will not typically be equal to the total effect with dichotomous outcome variables "due to arbitrary scaling of the error in estimation in the logistic regression model (Hayes, 2013, p. 433).

3.11.4 Study IV

The MI counsellors' MI skill as measured using the MITI manual, version 3.0 was assessed at baseline (2004) and then at 10 consecutive assessments until February 2007. At each assessment, a mean score for each MITI 3.0 variable was calculated from the three sessions for each counsellor. A particular MITI score at a given time therefore represents the mean of three sessions.

3.12 ETHICAL CONSIDERATIONS

Ethical approval was granted by the Karolinska Institutet Northern Research Ethics Committee (00-367) and the Regional Ethical Review Board in Stockholm (2011/1184-31/5).

4 RESULTS

4.1 STUDY RETENTION AND ATTRITION ANALYSES

In Study I, 195/296 (66%) of the clients in the MI group and 288/476 (61%) of the clients in the TAU group returned the postal follow-up questionnaire at 12-month follow-up ($p = .13$). The clients who completed the follow-up questionnaire were somewhat older (49 years, $SD = 15$ vs 45 years, $SD = 15$, $p < .01$), smoked a smaller amount of cigarettes (15 per day, $SD = 8$ vs 17 per day, $SD = 9$, $p < .05$), and had smoked for a longer period of time (30 years, $SD = 14$ vs 27 years, $SD = 14$, $p < .05$), compared to clients lost to follow-up.

The 106 clients included in Studies II and III were compared to the 53 clients who answered the registration questionnaire and had their first treatment session audio-recorded during the study period, but did not answer the follow-up questionnaire. The only baseline characteristic that statistically significantly differed was client age. The mean age of clients who returned the follow-up questionnaire was 51 years ($SD = 14$), compared to the mean age of 46 ($SD = 15$) for non-responders ($p < .05$). The 106 clients were also compared to 854 clients who had their first treatment session during the study period and answered both questionnaires, but did not have their first treatment session audio-recorded. Here we also found one baseline characteristic that was significantly different. The percentage of clients smoking at first contact was 90/106 (85%) in the included study sample, compared to 625/853 (73%, one missing) of those clients who did not have their first treatment session audio-recorded ($p < .01$).

4.2 TREATMENT DOSE

Clients in both the MI and TAU groups in Study I received an average of three counselling sessions. The average total contact time was 49 minutes ($SD = 48$) for clients in the MI arm and 51 minutes ($SD = 44$) in the TAU arm. The difference in average contact time between the two arms was not statistically significant ($p = .61$). In the sample included in Studies II and III, clients received a median of two (interquartile range [IQR] = 2) treatment sessions and the median total contact time was 38 (IQR = 33).

4.3 TREATMENT FIDELITY MEASURED BY THE MITI

The MI counsellors in the clinical trial did not reach the BP threshold in all assessed sessions. In the middle of the study period, they had 68% of the sessions above the recommended threshold for BP in the Empathy variable; 61% reached the BP threshold in MI Spirit. With regard to the MITI indices, 47% of MI counsellor sessions were above the BP threshold in the percentage MI Adherent utterance index, 31% were above the threshold in the proportion Reflections to Questions index, 60% were above the threshold in the percentage Complex Reflections index, and 24% were above the threshold in the percentage Open Questions index. However, the MI counsellors did deliver significantly higher scores in all MITI measured MI skill variables, compared to the TAU counsellors.

4.4 EFFECTIVENESS OF MI IN SMOKING CESSATION TREATMENT

We controlled for a variety of potential confounders (e.g. number of contacts, total contact time, number of years smoked, number of cigarettes smoked per day) and did not find any variable to substantially change the strength of the association. Therefore, only unadjusted analyses are presented.

The intention-to-treat analysis in Study I, where non-responders were assumed still to be smoking at follow-up, revealed that 5% more clients who had talked with an MI counsellor in the first treatment session reported 7-day point prevalence and 6-month continuous abstinence at 12-month follow-up compared to the clients who had talked to an TAU counsellor in the first session. Among MI clients, 74/296 (25%) were point prevalence abstinent compared to 95/476 (20%) of TAU clients (OR 1.34, 95% CI 0.95-1.89; $p = .10$). On the continuous abstinence measure the difference between treatments reached statistical significance; 57/296 (19%) MI clients were continuously abstinent compared to 66/476 (14%) of TAU clients (OR 1.48, 95% CI 1.00; 2.19, $p < .05$).

In the subgroup analysis where we excluded those clients who received contaminated treatment or did not complete the follow-up questionnaire, we also found 5% more clients in the MI group to be point prevalence (38% vs. 33, OR 1.29, 95% CI 0.85-1.95, $p = .24$) and continuous abstinent (28% vs. 23%, OR 1.26, 95% CI 0.80-2.00, $p = .32$) at follow-up, compared to the clients in the TAU group. The difference between groups was, however, not statistical significant.

The estimates and corresponding confidence intervals in the two-level hierarchical logistic regression model were almost identical to the one-level analysis. The model showed very low between-cluster variance relative to within-cluster variance, i.e. the quit rate among clients varied more within counsellors than it did between counsellors.

4.5 ACTIVE COMPONENTS OF MI IN SMOKING CESSATION TREATMENT

4.5.1 The relational component

We did not find Empathy (OR 1.34, 95% CI 0.81-2.21, $p = .25$) or MI spirit (OR 1.58, 95% CI 0.96-2.64, $p = .08$) to statistically significant predict 6-months continuous abstinence at follow-up in this study setting (Study II). The counsellor's demonstration of the spirit of MI was, however, a statistically significant predictor of outcome when the borderline significant negative interaction effect (OR 0.53, 95% CI 0.28-1.00, $p = .051$) between client language and MI spirit was taken into account. The adjusted odds for client to stop smoking increased for every higher level of MI spirit (OR 2.07, 95% CI 1.16-3.71, $p < .05$) when clients did not express any Activation (ACT) utterance favouring change.

4.5.2 The technical component

The association between counsellors' technical skills and client language (i.e., the *a* path of the technical component) were analysed using sequential analysis in Study III. The transition matrix included 7869 lag 1 transitions from the 106 sessions (see Table 5). CT was more likely than expected by chance following MICO, QNEG, and RCT. Clients were less likely than was expected by chance to express CT following MIIN, QPOS, QNEUT, RST, RNEUT, and OTHER-C. ST was more likely than expected by chance after QPOS, RST, and REF+/- . ST was less likely to follow MICO, QNEUT, RCT, RNEUT, and OTHER-C.

In stratified counsellor to client transition analysis, 58 sessions were included in the high MI spirit group (4717 counsellor to client lag 1 transitions), and 48 sessions were included in the low MI spirit group (3152 counsellor to client lag 1 transitions). We found similar patterns in the two MI spirit groups regarding the probabilities that clients respond with CT, ST or F/A immediately following MICO, MIIN, QNEUT, RNEUT, and OTHER-C. However, the odds for clients to express CT following QNEG (OR = 13.38 vs. 4.05, $Z = -4.90$, $p < .001$) and RCT (OR = 27.93 vs. OR = 15.11, $Z = -2.63$, $p < .01$) were significantly higher in the low MI spirit group, compared to the high MI spirit group. The odds for clients to express ST following RST were also significantly higher in the low MI spirit group (OR = 102.92), compared to the high MI spirit group (OR = 40.96, $Z = -2.56$, $p < .05$). The probability of QNEG, RCT, and RST to be followed by F/A were significantly lower in the low MI spirit group, compared to the high MI spirit group.

Table 5. Counsellor to client transition probabilities.

Initial behaviour	Subsequent behaviour								
	All sessions (n=107)			High MI spirit group (n=58)			Low MI spirit group (n=48)		
	CT	ST	F/A	CT	ST	F/A	CT	ST	F/A
MICO	0.30*	0.04†	0.66†	0.33*	0.04†	0.63††	0.21	0.04	0.71
MIIN	0.17††	0.06	0.76*	0.24	0.06	0.70	0.15	0.06	0.79
QPOS	0.12†	0.65*	0.24†	0.14††	0.60*	0.26†	0.08	0.71*	0.20†
QNEG	0.58*	0.05	0.36†	0.53*	0.06	0.41†	0.68*	0.04	0.28†
QNEUT	0.10†	0.04†	0.86*	0.11†	0.04†	0.84*	0.09†	0.04†	0.87*
RCT	0.75*	0.02†	0.23†	0.74*	0.02†	0.24†	0.80*	0.02†	0.18†
RST	0.07†	0.74*	0.19†	0.10†	0.70*	0.21†	0.00†	0.86*	0.14†
RNEUT	0.07†	0.04†	0.89*	0.09†	0.04†	0.87*	0.04†	0.03†	0.92*
REF+/-	0.25	0.27*	0.48†						
OTHER-C	0.12†	0.04†	0.84*	0.13†	0.05†	0.82*	0.12†	0.04†	0.75*

* More probable than expected by chance, $p < .01$; † Less probable than expected by chance, $p < .01$; †† Less probable than expected by chance, $p < .05$; Bold = the odds ratios for the transitions in the two MI spirit groups differed statistically significantly; CT = Change talk; ST = Sustain talk; F/A = Follow/neutral or ask statements by the client; MICO = MI-consistent behaviours; MIIN = MI-inconsistent behaviours; QPOS = Positive questions, i.e., questions evoking positive aspects about the target behaviour; QNEG = Negative questions, i.e., questions evoking negative aspects about the target behaviour; QNEUT = Neutral questions; RCT = Reflections of CT; RST = Reflections of ST; RNEUT = Reflections of neutral talk; REF+/- = Double-sided reflections; OTHER-C = All other counsellor utterances.

The relationship between client language and outcome (i.e., the *b* path of the technical component; Study II), were analysed in Study II. We did not find support for the two summarised measures of client language (all CT and all ST) to predict abstinence at 12 months' follow-up. The CT subcategory ACT and the combined ST subcategory Desire/Need (D/N) were the only categories associated with smoking status at follow-up. The adjusted odds to quit smoking was 1.73 times higher for each expressed ACT utterance (OR 1.73, 95% CI 1.08-2.76, $p < .05$). Contrary, D/N was negatively associated with outcome. For each expressed Desire or Need utterance, the adjusted odds to stop smoking was 80% less likely to occur (OR 0.20, 95% CI 0.04-0.97, $p < .05$). When all subcategories of CT and ST were included in the same model simultaneously, the ACT (OR 1.95, 95% CI 1.10-3.45, $p < .05$) and D/N (OR 0.09, 95% CI 0.01-0.76, $p < .05$) remained the only statistically significant predictors of smoking cessation.

The predictive power of ACT appears however to depend on the counsellors' MI spirit. The estimate for the interaction term MI spirit * ACT tells us that both the odds for MI spirit and ACT will become lower in combination with higher levels of the other predictor (see subheading "the relational component" for the interaction estimate). The adjusted odds for clients to stop smoking was almost 8 times higher for each expressed ACT utterance favouring change (95% CI 1.35-47.19, $p < .05$) in sessions with the lowest MI spirit score. For every higher level of MI spirit, the positive effect of increasing ACT utterances is reduced and finally becomes negative at the highest level of MI spirit. Regarding the D/N category, we couldn't test if there was an interaction effect between MI spirit and D/N with the available data in this study.

4.5.2.1 *Test of mediation*

The path coefficients in the mediator model are presented in Figure 4 (Study III). We found a high frequency of RCT to significantly predict a high frequency of the CT subcategory ACT ($\beta = 0.04$, 95% CI 0.01-0.06, $p < .01$), and a high frequency of ACT utterances to predict smoking cessation ($\beta = 0.50$, 95% CI 0.00-0.10, $p < .05$). RCT did however not predict the frequency of the ST subcategory D/N. The indirect effect(s) of ACT and/or D/N between RCT and smoking outcome was nonsignificant.

A high frequency of RST was found to predict a high frequency of D/N utterances ($\beta = 0.11$, 95% CI 0.05-0.16, $p < .01$), and those utterances, in turn, predicted continued smoking ($\beta = -2.20$, 95% CI -4.41-0.00, $p < .05$). The frequency of RST did not significantly predict the frequency of ACT utterances. However, the indirect effect of RST through both mediators (total indirect effect) was significant: $\beta = -0.25$ with 95% bootstrap CI of -1.15 to -0.02.

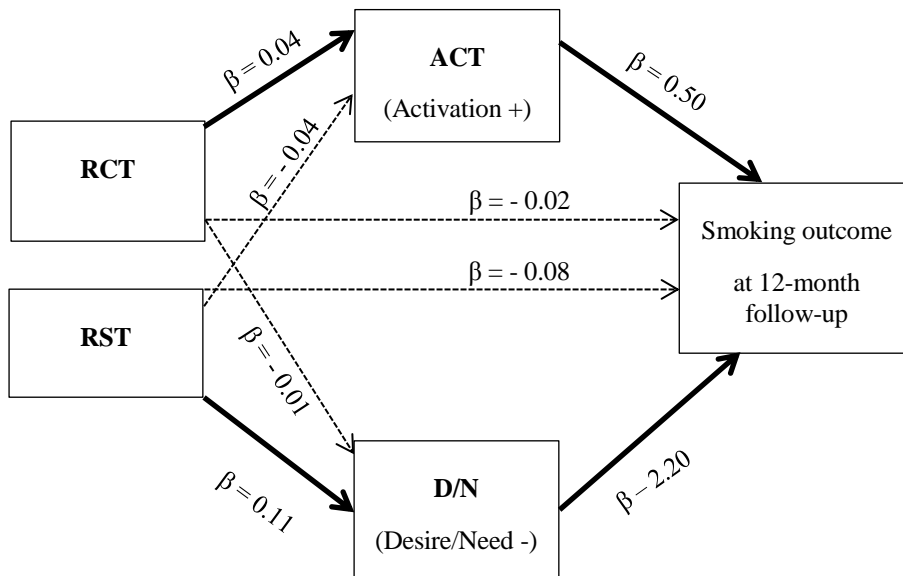


Figure 4. Parallel mediator model illustrating the effects of counsellors' technical skills on smoking cessation via client language. Black dotted lines = nonsignificant path coefficients; Black solid lines = significant path coefficients at $p < .05$. All analyses are adjusted for smoking status at baseline, length of first call, and number of treatment calls. RCT = Reflections of change talk; RST = Reflections of sustain talk. $n = 106$.

We found no support for the indirect effects to be moderated by MI spirit (i.e. the 95% bootstrapped confidence intervals for the moderated mediation indices were not entirely above zero). The nonsignificant conditional indirect effects do however suggest a decreasing magnitude of the indirect effect of ACT and an increasing magnitude of the indirect effect of D/N across increasing levels of MI spirit.

In the moderated mediation analysis, the negative direct effect (i.e. the effect of X on Y after controlling for the mediators and the moderator) of RCT on smoking outcome became statistical significant ($\beta = -0.11$, 95% CI -0.22 to -0.01, $p < .05$).

4.5.3 Acquisition and retention of MI skills

The three MI-trained SNTQ counsellors included in Study IV were below the recommended threshold for BP in all of the MITI variables at baseline. The mean *Empathy score* for all three counsellors was continuously improving throughout the study period. Approximately 10 months post initial MI training; the mean score for all three counsellors coincided with the recommended threshold for BP. However, there were great variations between counsellors and fluctuations in counsellor performance over time. In the first assessment period post MI training, counsellor 2 (C2) reached the BP threshold for Empathy and remained above the recommended threshold up until the last assessment period. Counsellor 3 (C3) and counsellor 1 (C1) reached the threshold about 12 and 20 months, respectively, post initial MI training.

The mean for all three counsellors' *MI spirit score* remained below the recommended threshold for BP until October 2006, i.e. 20 months post initial MI training. The development illustrated in the MI spirit score was however similar to that in Empathy in that the mean MI

spirit score was continuously increasing, but there were variations across counsellors and in counsellors over time.

The mean value in the behaviour count index *Ratio of Reflections to Questions* for all counsellors reached the BP threshold in the first assessment period post MI training (April 05). The variation across counsellors is considerable, but in general all three counsellors demonstrated use of as many Reflections as Questions in their sessions throughout the study period.

In the percentage of *Complex Reflections as a proportion all Reflections* index, the mean remains below the recommended threshold for BP until April 2006, i.e. about 14 months after initial MI training of counsellors. The use of Complex reflections was gradually improving throughout the study period, but there were great fluctuations in counsellor performance over time.

In the percentage of *Open Questions as a proportion of all Questions* index, the mean remains below the recommended threshold for Beginning Proficiency until 20 months after initial MI training, and the ability to use Open Questions rather than Closed Questions was not retained.

In the percentage of *MI Adherent utterances as a proportion of MI Adherent and MI Non-Adherent utterances* index it was a considerable variation across counsellors. In C2, there was a rapid increase in skill demonstrated post baseline, performance thereafter remained stable and above the threshold for BP throughout the study period. C1 and C3 improve steadily, but remain below the recommended threshold for BP at every assessment period.

5 DISCUSSION

The aims of the present thesis were to investigate the effectiveness and active components of MI in telephone-based smoking cessation treatment, and to explore smoking cessation counsellors' acquisition of MI skills.

5.1 MI ENHANCES SMOKING CESSATION TREATMENT

Integrating MI into the already effective TAU protocol at the SNTQ (Helgason, et al., 2004) increased client abstinence rates by 5%. At 12-month follow-up, 19% of clients allocated to MI in their first treatment session reported 6-month continuous abstinence, versus 14% of clients allocated to TAU. It is reasonable to believe that more clients in the MI group were continuously abstinent at follow-up because MI counsellors motivated more clients to make a decision to try to stop smoking in their first treatment session. Another possibility, however, is that the MI counselling better helped to reduce the relapse rate among those who did quit. Either way, the 5% higher abstinence in the MI group should be considered clinically relevant because of the huge health gains associated with stopping smoking (Fiore, et al., 2008; West, 2007). Approximately 2000 smokers receive smoking cessation counselling at SNTQ each year. In light of the present results, it is estimated that approximately 100 more SNTQ clients every year will stop smoking with MI added to the treatment protocol. However, these results must be interpreted with caution, as no significant difference between the two treatment protocols was found in the subgroup analysis.

5.2 HYPOTHESISED ACTIVE MI COMPONENTS PREDICT SMOKING OUTCOME

The hypothesised positive association between high relational skills and smoking abstinence at follow-up was only partially confirmed. The counsellors' demonstration of MI spirit was positively associated with smoking cessation among clients with low motivation to quit smoking (i.e. did not express ACT utterances favouring change).

The hypothesised associations between MI technical skills and in-session client language, i.e. the *a* path of the technical mediational model, were generally confirmed. If SNTQ counsellors used questions and reflections favouring change, clients were more likely to respond immediately with CT, and less likely to respond with ST or F/A. Conversely, clients were more likely to respond with ST, and less likely to respond with CT or F/A, following questions and reflections favouring the status quo. In-session client language was, in turn, found to predict smoking outcome (the *b* path). Clients expressing ACT utterances favouring change (e.g. "I'm ready to try nicotine replacement therapy") were significantly more likely to be smoke-free at follow-up, whereas clients expressing a Desire (e.g. "I do not want to quit smoking") or a Need (e.g. "I need my morning cigarette") to continue to smoke were significantly more likely still to be smoking at follow-up. The mediational effect of client language between counsellor technical skills and smoking outcome was also supported. A high frequency of counsellor RST was found to indirectly predict continued smoking through client language by decreasing ACT utterances favouring change and increasing client language expressing a Desire or a Need to continue to smoke.

Overall, these findings regarding the active MI components are consistent with MI theory (Miller & Rose, 2009) and previous research (Apodaca & Longabaugh, 2009; Magill, et al., 2014). The predictive power of D/N is consistent with the findings of Gaume et al., (2013) that the frequency of both Desire and Need utterances favouring the status quo was independently predictive of negative drinking outcomes, and with the findings of Baer et al., (2008) that expressed Ability/Desire (as a combined category) utterances favouring the status quo predicted less abstinence in substance abuse treatment. Regarding the CT subcategory ACT, this is the first time ACT utterances have been measured and related to the outcome. The inter-rater reliability of the ACT category was poor, however, so the findings related to this category must be interpreted with caution.

The thesis contributes with a deeper knowledge regarding the active components of MI in smoking cessation treatment. Future experimental studies should assess whether modifying these core MI components in smoking cessation (e.g. focusing on evoking ACT utterances) enhance or reduces the likelihood of quitting (Lindson-Hawley, et al., 2015).

5.3 THE IMPLEMENTATION OF MI DID NOT SUCCEED - OR DID IT?

A major strength of Study I is that the treatment integrity of MI was assessed in both the MI and TAU groups. The MITI assessment informed us about the degree of treatment integrity in the MI group and enabled monitoring for possible spill-over effects of MI skills from the MI counsellors to the TAU counsellors. Based on the MITI scores in each group, it is reasonable to conclude, first, that the TAU counsellors did not implement the active MI components and, second, that the MI counsellors did unfortunately not implement the active MI components at desirable levels, despite extensive MI training, including continual supervision and systematic feedback on counsellors' clinical practice. In the middle of the study period (approximately 14 months post initial MI training), the MI counsellors had not reached the recommended thresholds for BP in all assessed sessions. In addition to this, a notable difficulty for the smoking cessation counsellors to acquire and retain MI skill was also observed in the two-and-a-half-year exploratory study. Important MI skills (e.g. the relational MI spirit skill) took over one and a half years to learn for some counsellors. Great variations in MI skill between counsellors, and fluctuations in performance in counsellors over time, were also observed. Overall, these findings are consistent with previous research (e.g., Bohman, Forsberg, Ghaderi, & Rasmussen, 2013; Dunn et al., 2016; Forsberg, Ernst, Sundqvist, & Farbring, 2011) and suggest a potential to improve MI training in normal working conditions in real-life clinical settings.

It is possible that the results from the clinical trial would have been more robust had the implementation of the active components of MI in the MI group completely succeeded. However, the MI counsellors in Study I did achieve significantly higher scores in all MITI-measured MI skill variables than did the TAU counsellors. This means that we were comparing two groups that differed significantly in terms of counsellor MI skills. Further, the desirable levels of MI competence (i.e. the commonly used proficiency thresholds) are based on expert opinion and not on empirical findings (Moyers, Martin, Manuel, et al., 2009) and it is unclear what level of MI fidelity that is “ ‘good enough’ to facilitate change within particular contexts or sufficient to conclude that MI was actually delivered and tested” (Miller

& Rollnik, 2014, p. 236). So, whether or not the MI counsellors' MI performance in the clinical trial should be considered as sufficient quality remains to be investigated.

5.4 DOES HIGH MI SPIRIT STIFLE ALREADY MOTIVATED CLIENTS DESIRE TO CHANGE?

Contrary to expectations, there was a borderline significant negative interaction effect between the frequency of ACT utterances favouring change and counsellor demonstration of MI spirit. A high level of MI spirit combined with clients who did not express ACT utterances increased the likelihood of smoking cessation, while a high level of MI spirit combined with clients who expressed a high frequency of ACT utterances decreased the likelihood of smoking cessation.

There are several possible explanations for this negative interaction effect. One explanation is related to the classification of client language. Some client language categories reflect "preparatory CT" (i.e. utterances reflecting motivation for change) and some reflect "mobilising CT" (i.e. utterances reflecting movement towards change) (Miller and Rollnick, 2013, pp. 159-166). Activation utterances are examples of mobilising CT. It is possible that clients who already are, or quickly become, motivated and express mobilising CT do not benefit from high MI spirit. MI was first developed for clients with low baseline motivation (Miller, 1983) and studies have confirmed that MI may be more effective when used with clients who have a low baseline motivation to quit smoking (Hettema & Hendricks, 2010). In addition, Gaume, Gmel, Faouzi, and Daepfen (2009) also observed, in an alcohol intervention study, a trend that the positive effect of high MI skills substantially decreases with a high level of CT utterances (expressed Ability to change).

A second possible explanation is related to the MI delivered during the study period. The counsellors were trained in MI in early 2005 in accordance with the second edition of Miller and Rollnick's (2002) *Motivational Interviewing: Preparing People to Change*, in which the MI session is described as taking place in two phases. In simplified terms, in phase one the counsellor should evoke the client's motivation for change, while in the second phase the counsellor should strengthen the client's commitment to change and evoke a change plan (Miller & Rollnick, 2002). Unfortunately, the MI training the SNTQ counsellors received in 2005 was very focused on phase one and did not emphasise what counselling methods to use in phase two. It may be that high MI spirit ordinarily does interact positively with motivational language, but that the MI performed during the study period was too focused on phase one, and counsellors did not know how to help already motivated clients without switching to a more advisory treatment style which would result in lower MI spirit scores.

Future large-scale studies are required before any conclusions can be drawn. More knowledge of the interaction effect between relational skills and the various subcategories of client language is needed. The present findings nevertheless provide an important preliminary look at how MI Spirit and client language interact in smoking cessation treatment and can be used as a foundation for future studies.

5.5 IS MORE REFLECTIVE LISTENING ALWAYS A GOOD THING?

Studies I and IV used the most commonly used MI treatment integrity measure, the MITI. The MITI counts all questions and all reflections and subcategorises them as open or closed and simple or complex, respectively. The MITI-coded sessions from the clinical trial provide information about the significantly higher number of reflections and open-ended questions in MI sessions than in TAU sessions.

However, the findings of Study III highlight the importance of assessing the direction of questions and reflections. Unfortunately, the MITI manual does not assess the direction of reflections and questions, which is why we cannot be sure that the higher numbers of reflections and open-ended questions in the MI sessions in the clinical trial are exclusively good. Based on the 106 sessions included in Studies II and III (see Table 4), it is reasonable to believe that the MI sessions in the clinical trial (and the sessions included in the exploratory MI training study) had more reflections favouring CT, but also more reflections that reinforced ST and F/A, compared to the TAU sessions.

The present findings highlight the need for a greater emphasis on the direction of questions and reflections in MI training as well as in treatment integrity instruments. Fortunately, promising results regarding the teachability of the technical skills needed to selectively reinforce CT (and attend less to ST) have been presented by Moyers, Houck, Glynn, & Manuel (2011). They found that clients expressed more in-session CT if they talked to counsellors who had received MI training with an emphasis on evoking and reinforcing of CT (through reflections and questions) than counsellors who received “as usual” MI training (Moyers et al., 2011). More research is needed into how MI training should be provided to help counsellors master these technical micro-skills is needed. MI integrity measures that assess these skills (e.g. the updated MITI manual, version 4.2.1; Moyers, et al., 2016), could with great advantage be used in MI training and supervision and as an integrity instrument in clinical trials.

5.6 DOES THE PREDICTIVE VALUE OF CLIENT LANGUAGE DEPEND ON THE TREATMENT SETTING?

Based on previous research (e.g., Bertholet, Faouzi, Gmel, Gaume, & Daeppen, 2010; Moyers et al., 2007; Vader, et al., 2010), it was hypothesised that high frequencies of all CT and ST, respectively, would predict outcome in the expected direction. However, in this setting, the positive association between high frequency of all CT and outcome, as well as the negative association between high frequency of all ST and outcome were non-significant.

Most CT and ST subcategories were also non-significantly associated with outcome. This was surprising because several other subcategories of CT and ST have been demonstrated to predict outcome in previous studies. For example, the strength of clients’ expressed commitment to change has been demonstrated to predict outcome in the treatment of pathological gambling (Hodgins, Ching, & McEwen, 2009) and substance abuse (Amrhein, et al., 2003; Osilla et al., 2015; Engle, Macgowan, Wagner, & Amrhein, 2010). The average strength of clients’ expressed ability to (Gaume, et al., 2008) and desire and reasons for (Walker, Stephens, Rowland, & Roffman, 2011) change have also been demonstrated to

predict changes in alcohol consumption and marijuana use, respectively.

One possible explanation for the absence of significant relationships between client language categories and outcome is low statistical power. The effect sizes were relatively small, so the power to detect significant associations was limited. It is also plausible that the predictive power of different client language variables varies according to the setting and target behaviour in which MI is applied (Magill, et al., 2014). Another explanation discussed in previous research e.g. (e.g. Moyers, et al., 2009; Barnett, et al., 2014) is the fact that the variables are not measured or analysed in the same way in all MI process research studies, which limits the comparability of results. We measured the frequency of each client language category, but not the strength (e.g. Walker, et al., 2011) or the patterns of client language (Houck & Moyers, 2015), factors that have previously been demonstrated to predict outcome. Nor did we take into account when the utterances were expressed during the course of the session in our analyses, which has also been demonstrated to affect outcome (Amrhein, et al., 2003; Bertholet, et al., 2010).

5.7 SHOULD REFLECTIONS OF CT BE AVOIDED?

The negative direct effect of RCT on outcome in the moderated mediation analysis was surprising in light of MI theory (Miller & Rollnick, 2013) and previous research (Barnett, Moyers, et al., 2014). A possible explanation for this finding derives from the previous discussion about the interaction effect between MI spirit and ACT utterances. It is possible that SNTQ counsellors that reflect a lot on different kinds of CT are the same counsellors that get stuck in phase 1 (the evoking process) even though sufficient motivation has been evoked and the client is ready to move on to phase 2 (the planning process). If a counsellor is too slow in moving into phase 2 with a motivated client, the client may return to an earlier state of readiness which, in turn, is likely to result in a poorer outcome (Rosengren, 2009). Rosengren (2009) has described this shift from why to change to how to change as follows:

This point in the therapeutic process hinges on good timing. The practitioner must respond when the client is ready or risk having the client return to an earlier state of readiness. It is simply too uncomfortable psychologically to remain aware of a motivating discrepancy and fail to act on it. An individual who is in this situation for too long will engage in strategies to reduce the perception of risk. The swimmer will decide it's too cold, too deep, or not the right time and head back to the shore. Thus the therapist must be attuned to when the person is ready and respond by assisting with a commitment and moving forward on a plan. (Rosengren, 2009, p. 255)

More studies investigating the direct effects of RCT on outcome are required before any conclusions can be drawn. We hope that this finding will encourage researchers to replicate the current study, and we recommend that future research include both CT and ST as mediators when investigating the direct and indirect effects of counsellor techniques on outcome.

5.8 METHODOLOGICAL CONSIDERATIONS

Findings should be considered in light of the limitations of the studies' methodologies.

5.8.1 Construct validity

5.8.1.1 *Measurement bias*

Possible threats to the construct validity requires acknowledgement. First, even though the inter-rater reliability between the coders was generally good, one possible threat to the validity of the MITI and MI-SCOPE coding is how the coders interpreted the manuals. However, the coders received a comprehensive coder-training, had coding-meetings every week, and worked closely together. Second, measurement bias may have occurred because the coders were not blinded to the hypotheses in Studies II and III. It is possible that MI-SCOPE coders were more inclined to categories client language following RCT as CT, or more inclined to categories client language as CT in certain sessions. However, such bias seems less likely given that some of the findings were in the opposite direction to what we had hypothesised. Third, a threat to the construct validity is how relational skills in Studies II and III have been measured. In the MITI, version 3.1, the MI spirit variable is calculated as the mean value of the three sub-variables: Evocation, Collaboration, and Autonomy Support (Moyers, Martin, Manuel, et al., 2009). However, the sub-variable Evocation actually measures a technical rather than relational MI skill (Moyers, et al., 2016). Future research should investigate how the results related to MI spirit persist when relational skills and technical skills are more accurately measured and analysed.

5.8.2 Internal validity

5.8.2.1 *Non-random assignment bias in Study I*

Formal randomisation that balances both known and unknown prognostic factors of clients between treatment groups was not practicable to implement given the real life clinical setting. This threatens the internal validity of this research. However, the two groups were monitored during the recruitment process to confirm that they were equivalent at baseline. In addition, when analysing the data, we controlled for a variety of potential confounders and did not find any variable that substantially changed the strength of the association. When adjusting for known prognostic factors at SNTQ (i.e., age, gender, smoking status at baseline, ability to handle stress and depressive mood, probability of being smoke-free in one year, and passive smoke exposure), the probability of continuous abstinence was 1.59 times higher for clients who had talked with an MI counsellor in the first treatment session than for clients who had talked to a TAU counsellor in an intention-to-treat analysis (95% CI 1.03-2.24, $p < .05$; unpublished and not included in Study I).

5.8.2.2 Confounding bias

The non-experimental nature of our data in Studies II and III may limit the possibility of drawing strong conclusions. The associations between client language and smoking outcome could be explained by an unspecified and unmeasured underlying cognitive or affective process (Miller & Rose, 2009). The MI-trained SNTQ counsellors might trigger this unmeasured variable (e.g., client readiness to change, decision, or acceptance; Miller & Rose, 2009), which might simultaneously increase ACT utterances, decrease D/N utterances, and increase the likelihood of smoking abstinence.

5.8.2.3 Self-report bias

We did not conduct any biochemical validation of the smoking outcome measures. One systematic review identified frequent discrepancies between self-reported and biochemically validated measures of abstinence, suggesting that biochemical testing would be more valid (Lai, et al., 2010). However, other reviews indicate that in most studies, self-reporting of smoking is accurate (Velicer, Prochaska, Rossi, & Snow, 1992). It is suggested that the degree to which self-reported abstinence is reliable depends on the context of the intervention (Patrick et al., 1994; Velicer, et al., 1992), and where there is no bias regarding the desirability of tobacco use, self-reporting may be reliable (Foss, Haug, Hesla, Lund-Larsen, & Vasli, 1998). In self-initiated interventions such as SNTQ, clients neither benefit nor suffer as a result of their purported abstinence, so there would be limited incentive for inaccurate self-reporting (Foss, et al., 1998; Lai, et al., 2010).

5.8.2.4 Attention bias

The fact that the MI counsellors received more attention than the TAU counsellors may have affected the study results. This may give rise to an attention effect, sometimes referred to as the “Hawthorne effect” (Holden, 2001; McCarney et al., 2007). In Study I we sought to compensate for this by also providing the TAU counsellors with training and supervision during the study period. We cannot, however, exclude the possibility that MI counsellors altered their performance as a result of the extra attention they received.

5.8.3 External validity

5.8.3.1 Selection bias

The present findings cannot be generalised to all SNTQ callers. The vast majority of those who called to discuss their own smoking behaviour just wanted to ask short practical questions (e.g., “What strength of nicotine patch should I use?”) and were not interested in receiving smoking cessation support. In Study I, only 1380 of the 4208 (33%) callers who

called to discuss their own smoking behaviour were classified as treatment calls, orally agreed to participate, and were sent a baseline registration questionnaire.

The generalisability of the results in Study I may be further affected by the fact that just over half (59%) of the clients who received the baseline registration questionnaire returned the questionnaire and were included in the study base. We do not know whether those clients who chose to participate differed in any way from those who declined to participate.

Compared with the general population of smokers in Sweden, women are overrepresented in the study sample (Public Health Agency of Sweden, 2015). About 80% of the included clients are women, a proportion in line with the findings of other studies performed at SNTQ (Helgason et al., 2004; Nohlert et al., 2014) and indicating that men are less likely than women to seek and accept telephone-based support for smoking cessation. The self-initiated contact also suggests a higher readiness to quit among SNTQ clients than among smokers in the general population. The SNTQ questionnaires are only available in Swedish, which further impairs the generalisability of the research. The age distribution of the clients included in Study I is, however, comparable to that of the general population of smokers (Public Health Agency of Sweden, 2015). The generalisability of the results may therefore be limited to Swedish-reading smokers who self-initiate smoking cessation support and are willing to participate in a study. The generalisability of the findings of Studies II and III may be further limited to SNTQ clients who are still smoking at baseline.

In Study IV only three of the eight MI counsellors at SNTQ were included, which severely limits the ability to draw conclusions and generalise these results regarding counsellors' acquisition and retention of MI skills at SNTQ. Exploratory research is not typically generalizable to the population at large but is nevertheless useful in generating hypotheses for future research. The present exploratory study does have several important advantages in terms of design and could be a useful model for large-scale replication.

5.8.3.2 Attrition bias

A major threat to external validity is participant attrition. We decided to treat all those clients lost to follow-up as smokers in the intention-to-treat analysis. This conservative approach is the standard way to handle missing data in smoking cessation trials (Akl et al., 2012; West, Hajek, Stead, & Stapleton, 2005) and does not overestimate treatment effects.

The baseline characteristics of those SNTQ clients lost to follow-up in this study (i.e., younger, smoked more cigarettes, and smoked for a shorter time) also suggest a poorer prognosis relative to the followed-up participants. In addition, a recently published drop-out study at SNTQ found that non-responders were more likely to be smokers 1.5–3 years later (Nohlert et al., 2016).

5.9 CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

This thesis makes a significant contribution to our understanding of how MI works in smoking cessation treatment in an ordinary clinical setting, and provides further empirical support for the hypothesised relational and technical MI components of smoking cessation treatment.

- The odds of 6-month continuous abstinence at follow-up were 1.5 times higher for clients who received MI counselling in their first treatment session than for clients who received TAU counselling (Study I). Integrating MI with already effective CBT-based smoking cessation programmes could further increase long-term abstinence rates.
- The implementation of MI was only partly successful in this ordinary clinical setting despite extensive MI training, including ongoing supervision and systematic feedback on counsellors' clinical practice (Studies I and VI). In the exploratory study, the three SNTQ counsellors' MI skills steadily improved throughout the two-year study period post initial MI training. However, great variations in MI skills between and within counsellors were found over time (Study IV). Training counsellors in MI to a high level of fidelity in routine clinical practice presents a great challenge. Organisations should consider the fact that MI seems to be a time-consuming method for counsellors to learn to practice before deciding to implement the method. More research regarding how to help counsellors learn new communication skills in a less time-consuming and expensive way are warranted.
- High relational skills (demonstrating the spirit of MI) were positively associated with smoking outcomes at follow-up among clients with low motivation to quit smoking (i.e., did not express ACT utterances favouring change) (Study II).
- SNTQ counsellors' technical skills predicted in-session client language. Client CT was more likely to occur after MICO utterances and questions and reflections favouring change, whereas client ST was more likely to occur after double-sided reflections and questions and reflections favouring the status quo (Study III). These findings underline the need for MI fidelity instruments to assess not only the frequency but also the direction of questions and reflections. The study findings also highlight the need for MI trainers to teach counsellors how to use reflective listening selectively, and not unintentionally to reinforce client ST.
- In-session client language predicted smoking outcome at follow-up. Clients expressing a high frequency of ACT utterances favouring abstinence and a low frequency of Desire or Need utterances were more likely to be continuously abstinent at follow-up (Study II). Smoking cessation counsellors should attend to in-session client language as it offers a way of predicting whether a client will stop smoking after the session. For example, if clients express a desire to smoke in the first treatment session, this is a fairly clear signal to the counsellor that the client will not stop smoking and that further intervention is necessary.

- SNTQ counsellors' RST indirectly predicted continued smoking through client language (Study III). This finding further emphasises that smoking cessation counsellors should avoid unintentionally reinforcing client ST.

6 ACKNOWLEDGMENT

I wish to express my sincere gratitude to all of you who have supported me during this journey and made this thesis possible. Especially I would like to thank:

My principal supervisor **Lars Forsberg** for motivating me to go into research and introducing me to this particularly interesting area of research. Thank you Lars for always believing in me and encouraging me! And a big thanks for motivating me to continue this journey those times I have been ambivalent (I'm so glad you are such a good MI counsellor!). If it had not been for you, this thesis would never have existed.

My co-supervisors **Ingvar Rosendahl**, **Pia Enebrink**, and **Gerhard Andersson**. **Ingvar**, thank you for making statistics fun! I've learned more than I could ever have imagined. Thank you for always being enthusiastic, encouraging, supportive and involved in my work. Our interesting and fun discussions about research (and so much more!) made this journey enjoyable from beginning to end. **Pia**, thank you for your constructive feedback, inspiration to always “dig deeper”, and endless encouragement. Also, thank you for being such a very warm and understanding person. You are a true role model for me, and for the research community! **Gerhard**, thank you for your valuable input and critical eye on manuscripts. I also want to thank you for helping me realize that one of the PhD students' many goals is to finish their studies (I could otherwise have continued this journey forever...).

All SNTQ counsellors and all SNTQ clients who kindly participated in the studies!

My former co-supervisor and co-author **Ásgeir Helgason** for sharing your excellent knowledge of smoking cessation in general and of quitlines in particular. You have taught me a lot during these past years about how to conduct and present research. Thank you Ásgeir for always being so helpful!

My co-author and friend **Lisa Forsberg** for guiding me through the mysteries of writing. Also, thank you for all the fun we have had during these years. Food vacay coming up!

Maria Rankka, **Ann Post**, **Teresa Tael**, **Catrine Björnström**, **Astri Brandell Eklund**, and **Mats Taftgård at SNTQ** for answering question after question after question ... Thank you!

Late **Dr. Wolfgang Hannöver** and **Carola Blaut** who trained me in MI-SCOPE coding and selflessly gave me all their developed macros, etc., to facilitate my MI-SCOPE coding work. I will be forever thankful for your generosity!

Tobias Lundgren and **Benjamin Bohman** at KCP for giving me the time needed to finalize this thesis.

All past and present colleagues and friends at MIC Lab/KCP, thank you all for creating this friendly, fun, and enthusiastic atmosphere! (Förenligt med MI). I would especially like to thank **Linda Ljunggren**, **Sophie Dixelius Diamantoglou**, **Lina Öhman**, and **Nina Lindroos** for motivating me to finish this journey, which will allow for us to continue on a new one!

All my fellow PhD students for good company throughout these years. Especially I want to thank **Henrik Josephson** for making these years bearable. I seriously don't know what I would

have done without you!, **Maria Beckman** for being the best listener and helping me to put things into perspective, **Åsa Nordman** for your friendship and for sharing both the cheerful and the frustrating moments in life, **Ann-Sofi Östlund** for our joyful scientific, and less scientific, discussions!, **Eva Nohlert** for all the good talks and for information exchange about the SNTQ.

Isra Black for proofreading manuscripts and making me aware of all my stupid mistakes.

My friends and former colleagues **Kerstin Börjesson-Toth** for Bangla!, **Carola Hellberg** for map reading, and **Clara Fagerlind** for Post-its.

My dear friends **Amanda, Angela, Elin, Emelie, Jenny E, Jenny R, Jorunn, Malin H, Malin M, Pernilla**, and **Petra** for just being there.

And finally, my family for their endless love and support. My in-laws **Annette** and **Björn** for always helping out in all possible manners. My brother **Karl** for helping me out with IT support (even when you actually don't have time for me). My parents **Christina** and **Bo** for your unconditional love, support and encouragement. Thank you so much for always helping out with Ingo and Ebba whenever needed. My husband **Mattias** for everything! Thank you for all your support during these years, and especially during these last months. I promise you Mattias that I will never again use the phrase "I'm done in 15 minutes". I love you! Our dog **Ingo** for always cheering me up after long work-nights! Our beloved daughter **Ebba** for making me realise what's important in life. Du är det finaste jag vet!

This really has been a long journey. I think I will end this thesis by quoting Dr. Sheldon Cooper:

"I would have been here sooner but the bus kept stopping for other people to get on it."

7 REFERENCES

- Akl, E. A., Briel, M., You, J. J., Sun, X., Johnston, B. C., Busse, J. W., . . . Guyatt, G. H. (2012). Potential impact on estimated treatment effects of information lost to follow-up in randomised controlled trials (LOST-IT): systematic review. *BMJ*, *344*. doi: 10.1136/bmj.e2809
- Amrhein, P. C., Miller, W. R., Yahne, C. E., Palmer, M., & Fulcher, L. (2003). Client commitment language during motivational interviewing predicts drug use outcomes. *J Consult Clin Psychol*, *71*(5), 862-878. doi: 10.1037/0022-006X.71.5.862 2003-07816-003 [pii]
- Anderson, C. M., & Zhu, S. H. (2007). Tobacco quitlines: looking back and looking ahead. *Tob Control*, *16 Suppl 1*, i81-86. doi: 16/Suppl_1/i81 [pii]10.1136/tc.2007.020701
- Apodaca, T. R., & Longabaugh, R. (2009). Mechanisms of change in motivational interviewing: a review and preliminary evaluation of the evidence. *Addiction*, *104*(5), 705-715. doi: 10.1111/j.1360-0443.2009.02527.xADD2527 [pii]
- Baer, J. S., Beadnell, B., Garrett, S. B., Hartzler, B., Wells, E. A., & Peterson, P. L. (2008). Adolescent change language within a brief motivational intervention and substance use outcomes. *Psychology of Addictive Behaviors*, *22*(4), 570-575. doi: 10.1037/a00130222008-17215-013 [pii]
- Bakeman, R., & Gottman, J.M. . (1997). *Observing Interaction: An Introduction to Sequential Analysis* (2nd ed ed.). New York: Cambridge University Press.
- Bakeman, R., & Quera, V. (2009). GSEQ 5.0 [Computer software and manual]. Retrieved from <http://www2.gsu.edu/~psyab/gseq/index.html>
- Bakeman, R., & Quera, V. (2011). *Sequential analysis and observational methods for the behavioral sciences*. Cambridge ; New York: Cambridge University Press.
- Barnett, E., Moyers, T. B., Sussman, S., Smith, C., Rohrbach, L. A., Sun, P., & Spruijt-Metz, D. (2014). From counselor skill to decreased marijuana use: Does change talk matter? *J Subst Abuse Treat*, *46*(4), 498-505. doi: 10.1016/j.jsat.2013.11.004S0740-5472(13)00275-4 [pii]
- Barwick, M. A., Bennett, L. M., Johnson, S. N., McGowan, J., & Moore, J. E. (2012). Training health and mental health professionals in motivational interviewing: A systematic review. *Children and Youth Services Review*, *34*(9), 1786-1795. doi: 10.1016/j.chilgyouth.2012.05.012
- Bertholet, N., Faouzi, M., Gmel, G., Gaume, J., & Daepfen, J. B. (2010). Change talk sequence during brief motivational intervention, towards or away from drinking. *Addiction*, *105*(12), 2106-2112. doi: 10.1111/j.1360-0443.2010.03081.x
- Boardman, T., Catley, D., Grobe, J. E., Little, T. D., & Ahluwalia, J. S. (2006). Using motivational interviewing with smokers: do therapist behaviors relate to engagement and therapeutic alliance? *J Subst Abuse Treat*, *31*(4), 329-339. doi: S0740-5472(06)00146-2 [pii]10.1016/j.jsat.2006.05.006
- Bohman, B., Forsberg, L., Ghaderi, A., & Rasmussen, F. (2013). An evaluation of training in motivational interviewing for nurses in child health services. *Behav Cogn Psychother*, *41*(3), 329-343. doi: 10.1017/S1352465812000331S1352465812000331[pii]
- Bolin, K., Lindgren, B. (2004) *Rökning - produktionsbortfall och sjukvårdskostnader* [Smoking - fall in production and medical service costs]. Stockholm: Statens folkhälsoinstitut, FHI [Swedish National Institute of Public Health], 2004:3.
- Bricker, J. B. (2010). Theory-based behavioral interventions for smoking cessation: Efficacy, processes, and future directions. In D. K. Suls J., Kaplan R. M. (Ed.), *Handbook of health psychology*. New York: Guilford Press.

- Campinez Navarro, M., Perula de Torres, L. A., Bosch Fontcuberta, J. M., Barragan Brun, N., Arbonies Ortiz, J. C., Novo Rodriguez, J. M., . . . Romero Rodriguez, E. M. (2016). Measuring the quality of motivational interviewing in primary health care encounters: The development and validation of the motivational interviewing assessment scale (MIAS). *Eur J Gen Pract*, 1-7. doi: 10.1080/13814788.2016.1177508
- Catley, D., Harris, K. J., Mayo, M. S., Hall, S., Okuyemi, K. S., Boardman, T., et al. . (2006). Adherence to principles of motivational interviewing and client within-session behavior. *Behav Cogn Psychother*, 34 (43–56). doi: 10.1017/ S1352465805002432
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment* 6(4), 284-290.
- de Roten, Y., Zimmermann, G., Ortega, D., & Despland, J. N. (2013). Meta-analysis of the effects of MI training on clinicians' behavior. *J Subst Abuse Treat*, 45(2), 155-162. doi: 10.1016/j.jsat.2013.02.006S0740-5472(13)00058-5 [pii]
- Dobber, J., van Meijel, B., Barkhof, E., Scholte op Reimer, W., Latour, C., Peters, R., & Linszen, D. (2015). Selecting an optimal instrument to identify active ingredients of the motivational interviewing-process. *J Psychosom Res*, 78(3), 268-276. doi: 10.1016/j.jpsychores.2014.10.010S0022-3999(14)00378-X [pii]
- Doll, R., Peto, R., Wheatley, K., Gray, R., & Sutherland, I. (1994). Mortality in relation to smoking: 40 years' observations on male British doctors. *BMJ*, 309(6959), 901-911.
- Dunn, C., Darnell, D., Atkins, D. C., Hallgren, K. A., Imel, Z. E., Bumgardner, K., . . . Roy-Byrne, P. (2016). Within-Provider Variability in Motivational Interviewing Integrity for Three Years after MI Training: Does Time Heal? *J Subst Abuse Treat*, 65, 74-82. doi: 10.1016/j.jsat.2016.02.008S0740-5472(16)00048-9 [pii]
- Elliott, R., Bohart, A. C., Watson, J. C., & Greenberg, L. S. (2011). Empathy. *Psychotherapy (Chic)*, 48(1), 43-49. doi: 10.1037/a00221872011-04924-007 [pii]
- Engle, B., Macgowan, M.J., Wagner, E.F., Amrhein, P.C. (2010). Markers of marijuana use outcomes within adolescent substance abuse group treatment. *Res Social Work Prac*. 20(3):271–282.
- Ezzati, M., Lopez, A. D., Rodgers, A., Vander Hoorn, S., & Murray, C. J. L. (2002). Selected major risk factors and global and regional burden of disease. [doi: DOI: 10.1016/S0140-6736(02)11403-6]. *The Lancet*, 360(9343), 1347-1360.
- Federico, B., Costa, G., & Kunst, A. E. (2007). Educational inequalities in initiation, cessation, and prevalence of smoking among 3 Italian birth cohorts. *Am J Public Health*, 97(5), 838-845. doi: AJPH.2005.067082 [pii]10.2105/AJPH.2005.067082
- Ferguson, J., Bauld, L., Chesterman, J., & Judge, K. (2005). The English smoking treatment services: one-year outcomes. *Addiction*, 100, 59-69. doi: 10.1111/j.1360-0443.2005.01028.x
- Fiore, M. C., Jaén, C. R., & Baker, T. B. (2008). *Treating tobacco use and dependence:2008 update* (2008 update ed.). Rockville, Md.: U.S. Dept. of Health and Human Services, Public Health Service.
- Fleiss, J. L. (1981). *Statistical methods for rates and proportions* (2nd ed. ed.). New York ; Chichester: Wiley.
- Forsberg, L., Berman, A. H., Kallmen, H., Hermansson, U., & Helgason, A. R. (2008). A test of the validity of the motivational interviewing treatment integrity code. *Cogn Behav Ther*, 37(3), 183-191. doi: 10.1080/16506070802091171794025509 [pii]
- Forsberg, L., Kallmen, H., Hermansson, U., Berman, A. H., & Helgason, A. R. (2007). Coding counsellor behaviour in motivational interviewing sessions: inter-rater reliability for the Swedish Motivational Interviewing Treatment Integrity Code

- (MITI). *Cogn Behav Ther*, 36(3), 162-169. doi: 778612500 [pii]10.1080/16506070701339887
- Forsberg, L. G., Ernst, D., Sundqvist, K., & Farbring, C. A. (2011). Motivational Interviewing delivered by existing prison staff: a randomized controlled study of effectiveness on substance use after release. *Subst Use Misuse*, 46(12), 1477-1485. doi: 10.3109/10826084.2011.591880
- Foss, O. P., Haug, K., Hesla, P. E., Lund-Larsen, P. G., & Vasli, L. R. (1998). Can we rely on self-reported smoking habits? *Tidsskrift for Den norske legeforening*, 118, 2165-2168.
- Gaume, J., Bertholet, N., Faouzi, M., Gmel, G., & Daepfen, J. B. (2013). Does change talk during brief motivational interventions with young men predict change in alcohol use? *J Subst Abuse Treat*, 44(2), 177-185. doi: 10.1016/j.jsat.2012.04.005S0740-5472(12)00082-7 [pii]
- Gaume, J., Gmel, G., & Daepfen, J. B. (2008). Brief alcohol interventions: do counsellors' and patients' communication characteristics predict change? *Alcohol Alcohol*, 43(1), 62-69. doi: agm141 [pii]10.1093/alcac/agm141
- Gaume, J., Longabaugh, R., Magill, M., Bertholet, N., Gmel, G., & Daepfen, J. B. (2016). Under what conditions? Therapist and client characteristics moderate the role of change talk in brief motivational intervention. *J Consult Clin Psychol*, 84(3), 211-220. doi: 10.1037/a00399182015-58972-001 [pii]
- Gwaltney, C. J., Metrik, J., Kahler, C. W., & Shiffman, S. (2009). Self-efficacy and smoking cessation: a meta-analysis. *Psychology of Addictive Behaviors*, 23(1), 56-66. doi: 10.1037/a00135292009-03284-018 [pii]
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach*.
- Hayes, A. F. (2015). An Index and Test of Linear Moderated Mediation. *Multivariate Behavioral Research*, 50(1), 1-22. doi: 10.1080/00273171.2014.962683
- Heckman, C. J., Egleston, B. L., & Hofmann, M. T. (2010). Efficacy of motivational interviewing for smoking cessation: a systematic review and meta-analysis. *Tob Control*, 19(5), 410-416. doi: 10.1136/tc.2009.033175tc.2009.033175 [pii]
- Helgason, A. R., Tomson, T., Lund, K. E., Galanti, R., Ahnve, S., & Gilljam, H. (2004). Factors related to abstinence in a telephone helpline for smoking cessation. *European Journal of Public Health*, 14(3), 306-310.
- Helgason AR, Post A. (2013). Sluta-röka-linjen - Behandlingsupplägg och rutiner [The Swedish National Tobacco Quitline - Support protocol and routines]. 2013:3. Stockholm: Centre for Epidemiology and Community Medicine, Stockholm County Council. Retrieved from http://dok.slso.sll.se/CES/FHG/Tobak/Rapporter/srl-behandlingsupplagg-och-rutiner.2013_4.2014.pdf
- Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. *Annu Rev Clin Psychol*, 1, 91-111. doi: 10.1146/annurev.clinpsy.1.102803.143833
- Hettema, J. E., & Hendricks, P. S. (2010). Motivational interviewing for smoking cessation: a meta-analytic review. *J Consult Clin Psychol*, 78(6), 868-884. doi: 10.1037/a00214982010-24305-005 [pii]
- Hiscock, R., Bauld, L., Amos, A., Fidler, J. A., & Munafo, M. (2012). Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*, 1248, 107-123. doi: 10.1111/j.1749-6632.2011.06202.x
- Hodgins, D. C., Ching, L. E., & McEwen, J. (2009). Strength of commitment language in motivational interviewing and gambling outcomes. *Psychology of Addictive Behaviors*, 23(1), 122-130. doi: 10.1037/a00130102009-03284-004 [pii]
- Holden, J. D. (2001). Hawthorne effects and research into professional practice. *J Eval Clin Pract*, 7, 65-70.

- Hosseini, A. R., Parker, L. A., Tursan d'Espaignet, E., & Chatterji, S. (2011). Social determinants of smoking in low- and middle-income countries: results from the World Health Survey. *PLoS One*, 6(5), e20331. doi: 10.1371/journal.pone.0020331 [pii]
- Houck, J. M., & Moyers, T. B. (2015). Within-session communication patterns predict alcohol treatment outcomes. *Drug & Alcohol Dependence*, 157, 205-209. doi: 10.1016/j.drugalcdep.2015.10.025
- Kaplan, J. E., Keeley, R. D., Engel, M., Emsermann, C., & Brody, D. (2013). Aspects of patient and clinician language predict adherence to antidepressant medication. *J Am Board Fam Med*, 26(4), 409-420. doi: 10.3122/jabfm.2013.04.12020126/4/409 [pii]
- Lai, D. T., Cahill, K., Qin, Y., & Tang, J. L. (2010). Motivational interviewing for smoking cessation. *Cochrane Database Syst Rev*(1), CD006936. doi: 10.1002/14651858.CD006936.pub2
- Lancaster, T., & Stead, L. F. (2005). Individual behavioural counselling for smoking cessation. *Cochrane Database Syst Rev*(2), CD001292. doi: 10.1002/14651858.CD001292.pub2
- Lane, C., Huws-Thomas, M., Hood, K., Rollnick, S., Edwards, K., & Robling, M. (2005). Measuring adaptations of motivational interviewing: the development and validation of the behavior change counseling index (BECCI). *Patient Educ Couns*, 56(2), 166-173. doi: S073839910400076X [pii]10.1016/j.pec.2004.01.003
- Lindson-Hawley, N., Thompson, T. P., & Begh, R. (2015). Motivational interviewing for smoking cessation. *Cochrane Database Syst Rev*(3), CD006936. doi: 10.1002/14651858.CD006936.pub3
- Lundahl, B., & Burke, B. L. (2009). The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses. *J Clin Psychol*, 65(11), 1232-1245. doi: 10.1002/jclp.20638
- Lundahl, B. W., Kunz, C., Brownell, C., Tollefson, D., & Burke, B. L. (2010). A Meta-Analysis of Motivational Interviewing: Twenty-Five Years of Empirical Studies. *Research on Social Work Practice*, 20(2), 137-160. doi: 10.1177/1049731509347850
- Madson, M. B., & Campbell, T. C. (2006). Measures of fidelity in motivational enhancement: a systematic review. *J Subst Abuse Treat*, 31(1), 67-73. doi: S0740-5472(06)00089-4 [pii]10.1016/j.jsat.2006.03.010
- Madson, M. B., Loignon, A. C., & Lane, C. (2009). Training in motivational interviewing: a systematic review. *J Subst Abuse Treat*, 36(1), 101-109. doi: 10.1016/j.jsat.2008.05.005S0740-5472(08)00088-3 [pii]
- Magill, M., Gaume, J., Apodaca, T. R., Walthers, J., Mastroleo, N. R., Borsari, B., & Longabaugh, R. (2014). The technical hypothesis of motivational interviewing: a meta-analysis of MI's key causal model. *J Consult Clin Psychol*, 82(6), 973-983. doi: 10.1037/a00368332014-20057-001 [pii]
- Martin, T., Christopher, P. J., Houck, J. M., & Moyers, T. B. (2011). The structure of client language and drinking outcomes in project match. *Psychol Addict Behav*, 25(3), 439-445. doi: 10.1037/a00231292011-08219-001 [pii]
- Martin, T., Moyers, T. B., Houck, J., Christopher, P., & Miller, W. R. (2005). *Motivational Interviewing Sequential Code for Observing Process Exchanges (MI-SCOPE) coder's manual*. University of New Mexico, Center on Alcoholism, Substance Abuse and Addictions (CASAA). Retrieved from <http://casaa.unm.edu/download/scope.pdf>
- Martins, R. K., & McNeil, D. W. (2009). Review of Motivational Interviewing in promoting health behaviors. *Clin Psychol Rev*, 29(4), 283-293. doi: 10.1016/j.cpr.2009.02.001S0272-7358(09)00009-9 [pii]

- Mathers, C. D., & Loncar, D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med*, 3(11), e442. doi: 06-PLME-RA-0071R2 [pii]10.1371/journal.pmed.0030442
- McCambridge, J., Day, M., Thomas, B. A., & Strang, J. (2011). Fidelity to Motivational Interviewing and subsequent cannabis cessation among adolescents. *Addict Behav*, 36(7), 749-754. doi: 10.1016/j.addbeh.2011.03.002S0306-4603(11)00086-4 [pii]
- McCarney, R., Warner, J., Iliffe, S., van Haselen, R., Griffin, M., & Fisher, P. (2007). The Hawthorne Effect: a randomised, controlled trial. *BMC Med Res Methodol*, 7, 30.
- Miller, W. R. (1983). Motivational Interviewing with Problem Drinkers. *Behavioural and Cognitive Psychotherapy* 11(02), 147-172. doi: doi:10.1017/S0141347300006583
- Miller, W. R. (2000). *Motivational Interviewing Skill Code (MISC) Coder's Manual*. Unpublished. Retrieved from <http://casaa.unm.edu/download/misc1.pdf>.
- Miller, W. R., & Mount, K. A. (2001). A small Study of training in motivational interviewing: Does one workshop change clinician and client behavior? *Behavioural and Cognitive Psychotherapy*, 29(4), 457-471. doi: 10.1017/s1352465801004064
- Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing:preparing people to change addictive behavior*. New York ; London: Guilford Press.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing:preparing people for change* (2nd ed.). New York: Guilford Press.
- Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing:helping people change* (3rd ed.). New York: Guilford Press.
- Miller, W. R., & Rollnick, S. (2014). The effectiveness and ineffectiveness of complex behavioral interventions: Impact of treatment fidelity. *Contemp Clin Trials*, 37(2), 234-241. doi: S1551-7144(14)00015-9 [pii]10.1016/j.cct.2014.01.005
- Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *Am Psychol*, 64(6), 527-537. doi: 10.1037/a00168302009-13007-002 [pii]
- Miller, W. R., Yahne, C. E., Moyers, T. B., Martinez, J., & Pirritano, M. (2004). A randomized trial of methods to help clinicians learn motivational interviewing. *J Consult Clin Psychol*, 72(6), 1050-1062. doi: 2004-21587-015 [pii]10.1037/0022-006X.72.6.1050
- Moyers, T. B., Martin, T., Christopher, P. J., Houck, J. M., Tonigan, J. S., & Amrhein, P. C. (2007). Client language as a mediator of motivational interviewing efficacy: where is the evidence? *Alcohol Clin Exp Res*, 31(10 Suppl), 40s-47s. doi: ACER492 [pii]10.1111/j.1530-0277.2007.00492.x
- Moyers, T. B., Martin, T., Houck, J. M., Christopher, P. J., & Tonigan, J. S. (2009). From in-session behaviors to drinking outcomes: a causal chain for motivational interviewing. *J Consult Clin Psychol*, 77(6), 1113-1124. doi: 10.1037/a00171892009-22711-010 [pii]
- Moyers, T. B., Martin, T., Manuel, J. K., Hendrickson, S. M., & Miller, W. R. (2005). Assessing competence in the use of motivational interviewing. *J Subst Abuse Treat*, 28(1), 19-26. doi: S0740-5472(04)00123-0 [pii]10.1016/j.jsat.2004.11.001
- Moyers, T. B., Martin, T., Manuel, J. K., Miller, W. R., & Ernst, D. (2007). Revised Global Scales: Motivational Interviewing Treatment Integrity 3.0 (MITI 3.0), from <http://casaa.unm.edu/download/miti3.pdf>
- Moyers, T. B., Martin, T., Manuel, J. K., Miller, W. R., & Ernst, D. (2009). *Revised Global Scales: Motivational Interviewing Treatment Integrity 3.1 (MITI 3.1)*. University of New Mexico, Center on Alcoholism, Substance Abuse and Addictions (CASAA). Retrieved from http://casaa.unm.edu/download/miti3_1.pdf.
- Moyers, T. B., Houck, J.M., Glynnm L.H., & Manuel, J.K. (2011). *Can specialized training teach clinicians to recognize, reinforce, and elicit client language in motivational*

- interviewing? Poster presented at the 34th annual meeting of the Research Society on Alcoholism. Retrieved from http://www.unm.edu/~jhouck/Houck_RSA_2011.pdf
- Moyers, T. B., & Miller, W. R. (2013). Is low therapist empathy toxic? *Psychology of Addictive Behaviors*, 27(3), 878-884. doi: 10.1037/a00302742012-26455-001 [pii]
- Moyers, T. B., Manuel, J. K., & Ernst, D. (2015). *Motivational Interviewing Treatment Integrity Coding Manual 4.2.1*. University of New Mexico, Center on Alcoholism, Substance Abuse and Addictions (CASAA). Unpublished. Retrieved from http://casaa.unm.edu/download/MITI4_2.pdf.
- Moyers, T. B., Rowell, L. N., Manuel, J. K., Ernst, D., & Houck, J. M. (2016). The Motivational Interviewing Treatment Integrity Code (MITI 4): Rationale, Preliminary Reliability and Validity. *J Subst Abuse Treat*, 65, 36-42. doi: 10.1016/j.jsat.2016.01.001S0740-5472(16)00014-3 [pii]
- Nohlert, E., Ohrvik, J., & Helgason, A. R. (2014). Effectiveness of proactive and reactive services at the Swedish National Tobacco Quitline in a randomized trial. *Tob Induc Dis*, 12(1), 9. doi: 10.1186/1617-9625-12-91617-9625-12-9 [pii]
- Nohlert, E., Ohrvik, J., & Helgason, A. R. (2016). Non-responders in a quitline evaluation are more likely to be smokers - a drop-out and long-term follow-up study of the Swedish National Tobacco Quitline. *Tob Induc Dis*, 14, 5. doi: 10.1186/s12971-016-0070-270 [pii]
- Osilla, K. C., Ortiz, J. A., Miles, J. N. V., Pedersen, E. R., Houck, J. M., & D'Amico, E. J. (2015). How Group Factors Affect Adolescent Change Talk and Substance Use Outcomes: Implications for Motivational Interviewing Training. *Journal of counseling psychology*, 62(1), 79-86. doi: 10.1037/cou0000049
- Osler, M., & Prescott, E. (1998). Psychosocial, behavioural, and health determinants of successful smoking cessation: a longitudinal study of Danish adults. *Tob Control*, 7(3), 262-267.
- Patrick, D. L., Cheadle, A., Thompson, D. C., Diehr, P., Koepsell, T., & Kinne, S. (1994). The validity of self-reported smoking: a review and meta-analysis. *American Journal of Public Health* 84(7), 1086-1093.
- Pirlott, A. G., Kisbu-Sakarya, Y., Defrancesco, C. A., Elliot, D. L., & Mackinnon, D. P. (2012). Mechanisms of motivational interviewing in health promotion: a Bayesian mediation analysis. *Int J Behav Nutr Phys Act*, 9(1), 69. doi: 10.1186/1479-5868-9-691479-5868-9-69 [pii]
- Public Health Agency of Sweden. (2015). Tobaksvanor - nationella resultat och tidsserier 2015 [Tobacco Habits - national performance and time series in 2015]. *Public Health Agency of Sweden*. Retrieved from <https://www.folkhalsomyndigheten.se/folkhalsorapportering-statistik/statistikdatabaser-och-visualisering/nationella-folkhalsoenkaten/levnadsvanor/tobaksvanor/>
- Rollnick, S., & Miller, W. R. (1995). What is Motivational Interviewing? *Behavioural and Cognitive Psychotherapy*, 23(04), 325-334. doi: doi:10.1017/S135246580001643X
- Rosengren, D. B. (2009). *Building motivational interviewing skills : a practitioner workbook*. New York ; London: Guilford.
- Rubak, S., Sandbaek, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: a systematic review and meta-analysis. *British Journal of General Practice*, 55, 305-312.
- Schwalbe, C. S., Oh, H. Y., & Zweben, A. (2014). Sustaining motivational interviewing: a meta-analysis of training studies. *Addiction*, 109(8), 1287-1294. doi: 10.1111/add.12558

- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: uses in assessing rater reliability. *Psychol Bull*, 86(2), 420-428.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychol Methods*, 7, 422-445.
- Soderlund, L. L., Madson, M. B., Rubak, S., & Nilsen, P. (2011). A systematic review of motivational interviewing training for general health care practitioners. *Patient Educ Couns*, 84(1), 16-26. doi: 10.1016/j.pec.2010.06.025S0738-3991(10)00387-3 [pii]
- Stead, L. F., Hartmann-Boyce, J., Perera, R., & Lancaster, T. (2013). Telephone counselling for smoking cessation. *Cochrane Database Syst Rev*(8), CD002850. doi: 10.1002/14651858.CD002850.pub3
- Stead, L. F., Koilpillai, P., Fanshawe, T. R., & Lancaster, T. (2016). Combined pharmacotherapy and behavioural interventions for smoking cessation. *Cochrane Database Syst Rev*, 3, CD008286. doi: 10.1002/14651858.CD008286.pub3
- The National Board of Health and Welfare. (2014). Registeruppgifter om tobaksrökningens skadeverkningar [Register data of the harmful effects of tobacco smoking]. *The Swedish National Board of Health and Welfare*. Retrieved from <https://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/19371/2014-3-4.pdf>
- Thun, M., Peto, R., Boreham, J., & Lopez, A. D. (2012). Stages of the cigarette epidemic on entering its second century. *Tob Control*, 21(2), 96-101. doi: 10.1136/tobaccocontrol-211-050294tobaccocontrol-2011-050294 [pii]
- Thyrian, J. R., Freyer-Adam, J., Hannover, W., Roske, K., Mentzel, F., Kufeld, C., . . . Hapke, U. (2007). Adherence to the principles of Motivational Interviewing, clients' characteristics and behavior outcome in a smoking cessation and relapse prevention trial in women postpartum. *Addict Behav*, 32(10), 2297-2303. doi: S0306-4603(07)00039-1 [pii]10.1016/j.addbeh.2007.01.024
- Tomson, T., Helgason, A. R., & Gilljam, H. (2004). Quitline in smoking cessation: a cost-effectiveness analysis. *International Journal of Technology Assessment in Health Care* 20(4), 469-474.
- Vader, A. M., Walters, S. T., Prabhu, G. C., Houck, J. M., & Field, C. A. (2010). The language of motivational interviewing and feedback: counselor language, client language, and client drinking outcomes. *Psychology of Addictive Behaviors*, 24(2), 190-197. doi: 10.1037/a00187492010-12599-002 [pii]
- Walker, D., Stephens, R., Rowland, J., & Roffman, R. (2011). The influence of client behavior during motivational interviewing on marijuana treatment outcome. *Addict Behav*, 36(6), 669-673. doi: 10.1016/j.addbeh.2011.01.009S0306-4603(11)00029-3 [pii]
- Vangeli, E., Stapleton, J., Smit, E. S., Borland, R., & West, R. (2011). Predictors of attempts to stop smoking and their success in adult general population samples: a systematic review. *Addiction*, 106(12), 2110-2121. doi: 10.1111/j.1360-0443.2011.03565.x
- Velicer, W. F., Prochaska, J. O., Rossi, J. S., & Snow, M. G. (1992). Assessing outcome in smoking cessation studies. *Psychological Bulletin*, 111(1), 23-41.
- West, R. (2007). The clinical significance of 'small' effects of smoking cessation treatments. *Addiction*, 102(4), 506-509. doi: 10.1111/j.1360-0443.2007.01750.x
- West, R., Hajek, P., Stead, L., & Stapleton, J. (2005). Outcome criteria in smoking cessation trials: proposal for a common standard. *Addiction*, 100(3), 299-303. doi: 10.1111/j.1360-0443.2004.00995.x
- World Health Organization. (2013). *WHO report on the global tobacco epidemic: enforcing bans on tobacco advertising, promotion and sponsorship*. Retrieved from http://apps.who.int/iris/bitstream/10665/85380/1/9789241505871_eng.pdf

- World Health Organization. (2016). *Tobacco Fact sheet*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs339/en/index.html>
- Zhu, S. H., Anderson, C. M., Tedeschi, G. J., Rosbrook, B., Johnson, C. E., Byrd, M., & Gutierrez-Terrell, E. (2002). Evidence of real-world effectiveness of a telephone quitline for smokers. *New England Journal of Medicine* 347(14), 1087-1093. doi: 10.1056/NEJMsa020660347/14/1087 [pii]
- Åström M, Zethraeus N, Heintz E, Nohlert E, Helgason ÁR, Burström K. (2016). *Kostnader och hälsoeffekter till följd av Sluta-Röka-Linjen* [The costs and health effects of the Swedish National Tobacco Quitline]. CHIS 2015:3. Stockholm: Centre for Epidemiology and Community Medicine, Stockholm County Council. Retrieved from http://dok.sll.se/CES/FHG/Folkhalsoarbete/Rapporter/kostnader-och-halsoeffekter-sluta-roka-linjen_rapport-CHIS-2015-3.pdf

8 APPENDIX A

8.1 BASELINE QUESTIONNAIRE

Enkät

från
Sluta-Röka-Linjen

Hej!

Du har varit i kontakt med oss på Sluta-Röka-Linjen. För att kunna ge det bästa stödet till dig och andra som vill förändra sina vanor ber vi dig om hjälp.

Vi vore tacksamma för dina svar på bifogade enkät om bemötandet och behandlingen mot bakgrund av ditt tobaksbruk.

Fyll i enkäten och sänd den tillbaka i bifogat kuvert.

Tack på förhand för dina svar. Har du några frågor ring oss gärna.

En uppföljning sker också om ett år för att se hur stödet fungerat.



Besvara frågorna genom att sätta ett kryss i rutan framför det svarsalternativ du väljer.

Tänk på att vid en del frågor kan flera alternativ väljas.



Sluta-Röka-Linjen
Centrum för folkhälsa, Tobaksprevention
Box 17533
118 91 Stockholm

1.

Kön?

- ☐ Man
☐ Kvinna

2.

När är du född?

År _____

3.

Var den du talade med förstående och lyhörd?

- ☐ Nej, inte alls
☐ Lite, men inte tillräckligt
☐ Det kändes varken eller
☐ Det kändes ganska bra
☐ Det kändes bra
☐ Det kändes mycket bra

4.

Kände du att den du talade med ansträngde sig för att förstå dina behov?

- ☐ Mycket
☐ Ganska
☐ Till viss del
☐ Inte alls

5.

Kände du att den du talade med visade respekt för dina egna mål och beslut?

- ☐ Mycket
☐ Ganska
☐ Till viss del
☐ Inte alls

**6. Kommer du att ha en fortsatt kontakt med Sluta-Röka-Linjen?
Du kan kryssa för flera orsaker om du vill.**

- ☐ Ja, troligen
- ☐ Nej, jag är rökfri/snufri och behöver därför inte ringa tillbaka.
- ☐ Nej, jag fick all den hjälp jag behövde vid första samtalet.
- ☐ Nej, Jag klarar mitt rökstopp/snustopp på egen hand.
- ☐ Nej, Jag fick inte den hjälp jag behövde.
- ☐ Annat, vad? _____

**7. Förutom Sluta-Röka-Linjen, vilket stöd har du för att sluta
röka/ snusa? Kryssa för alla som stödjer dig.**

- ☐ Inget stöd
- ☐ En familjemedlem
- ☐ En vän/vänner.
- ☐ En arbetskamrat/arbetskamrater.
- ☐ Personal från hälso- och sjukvården.
- ☐ Personal från tandvården.
- ☐ Personal från apoteket.
- ☐ Övrig professionell tobaksavvänjare.
- ☐ Annat, vad? _____
- _____
- _____

**8. Har du använt något läkemedel för rök/ snusavvänjning under
den senaste veckan? Kryssa för samtliga alternativ som stämmer
för dig.**

- ☐ Nej
- ☐ Ja, nikotintuggummi
- ☐ Ja, nikotinplåster
- ☐ Ja, annat nikotinläkemedel, nämligen _____
- ☐ Ja, Zyban
- ☐ Annat, vad _____
- _____
- _____

9. Vistas du i andras tobaksrök (passiv rökning) inomhus?
Kryssa för samtliga alternativ som stämmer för dig.

	Aldrig/nästan aldrig	Nästan varje dag	Någon gång i veckan	Någon gång i månaden	Mindre än 1 gång i månaden
I ditt hem					
På jobbet					
På andra ställen					

10. När du gick i skolan fick du undervisning om hälsoriskerna med att röka?

- ☐ Ja
☐ Nej
☐ Vet ej

11. Hur många hela årskurser har du gått i skolan?
(räkna grundskola + övriga)

Antal år

Frågor om rökvanor

12. Röker du eller har du någonsin rökt regelbundet?

- ☐ Ja, jag har rökt dagligen/så gott som dagligen i sammanlagt ca. ____ år.
☐ Ja, jag har rökt "av och till"/"feströkt" i sammanlagt ca. ____ år.
☐ Nej ➡ **Om nej, gå till fråga 23**

13. Har du rökt ett bloss eller mer under den senaste veckan?

- ☐ Ja, dagligen
☐ Ja, men inte dagligen
☐ Nej, jag har inte rökt alls

14. Om du fortfarande röker idag, har du planer på att sluta röka?

- ☐ Jag har inte rökt ett enda bloss under den senaste veckan (sju dagarna)
- ☐ Jag håller på att försöka sluta helt, just nu
- ☐ Jag tänker försöka sluta helt inom en månad
- ☐ Jag tänker försöka sluta helt inom de närmaste 6 månaderna
- ☐ Jag har inga planer på att försöka sluta inom de närmaste 6 månaderna

15. För ungefär hur länge sedan tog du ditt senaste bloss?

- ☐ 0-7 dagar
- ☐ Mer än 7 dagar men mindre än 6 månader
- ☐ 6-12 månader
- ☐ Mer än 12 månader

16. Tänder du en cigarett när du känner dig nedstämd?
Om du är helt rökfri idag, svara som det var när du fortfarande rökte.

- ☐ Ja, alltid/nästan alltid
- ☐ Ibland
- ☐ Sällan
- ☐ Nej, aldrig

Frågor om framtiden

17. Hur troligt är det att du kommer att vara helt rökfri om ett år?
Försök att placera dig på skalan 1-10 genom att ringa in en siffra.

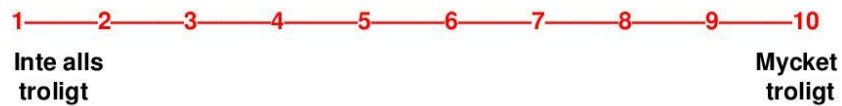
1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10
Inte alls troligt Mycket troligt

18. Jag klarar av att hantera stress och nedstämdhet utan att röka.
Försök att placera dig på skalan 1-10 genom att ringa in en siffra.

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10
Inte alls troligt Mycket troligt

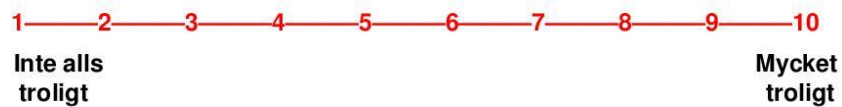
19. Jag kommer att använda läkemedel mot röksug om det skulle behövas.

Försök att placera dig på skalan 1-10 genom att ringa in en siffra.



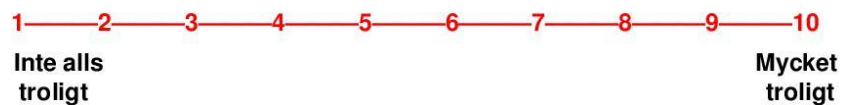
20. Jag kommer att använda mig av det stöd jag kan få hos Sluta-Röka-Linjen.

Försök att placera dig på skalan 1-10 genom att ringa in en siffra.



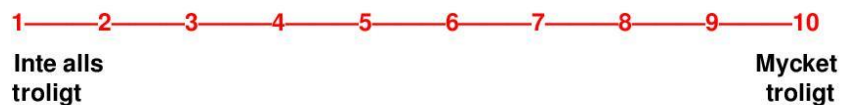
21. Jag kommer att följa de råd jag får hos Sluta-Röka-Linjen.

Försök att placera dig på skalan 1-10 genom att ringa in en siffra.



22. Jag kommer att lyckas undvika andras tobaksrök (passiv rökning) de första månaderna efter rökstoppet.

Försök att placera dig på skalan 1-10 genom att ringa in en siffra.



Frågor om snusvanor

23. Snusar du eller har du någonsin snusat regelbundet?

☐ Jag har snusat dagligen/så gott som dagligen i sammanlagt ca. ____ år.

☐ Jag har "snusat av och till" (inte dagligen) i sammanlagt ca. ____ år.

☐ Nej → **Om nej, kan du avstå från resten av formuläret**

24. Har du tagit en eller flera prillor under den senaste veckan?

☐ Ja, dagligen

☐ Ja, men inte dagligen

☐ Nej, jag har inte snusat alls

25. Om du fortfarande snusar idag, har du planer på att sluta snusa?

☐ Jag har inte tagit en enda prilla under den senaste veckan (sju dagarna)

☐ Jag håller på att försöka sluta helt, just nu

☐ Jag tänker försöka sluta helt inom en månad

☐ Jag tänker försöka sluta helt inom de närmaste 6 månaderna

☐ Jag har inga planer på att försöka sluta inom de närmaste 6 månaderna

26. För ungefär hur länge sedan tog du din senaste prilla?

☐ 0-7 dagar

☐ Mer än 7 dagar men mindre än 6 månader

☐ 6-12 månader

☐ Mer än 12 månader

**27. Hur troligt är det att du kommer att vara helt snusfri om ett år?
Försök att placera dig på skalan 1-10 genom att ringa in en siffra.**

1 — 2 — 3 — 4 — 5 — 6 — 7 — 8 — 9 — 10
Inte alls troligt Mycket troligt

Tack för din medverkan!

SLUTA-RÖKA-LINJEN  **RING 020-84 00 00**
www.slutarokat.se

9 APPENDIX B

9.1 12-MONTH FOLLOW-UP QUESTIONNAIRE

Löpnummer: _____

12-månaders-uppföljning

SLUTA-RÖKA-LINJEN

Hej!

Nu har det gått ungefär ett år sedan din första kontakt med Sluta-Röka-Linjen.

Vi är tacksamma om du besvarar denna enkät om hur det gått för dig.

Dina svar är lika intressanta vare sig du är tobaksfri eller inte.

Fyll i enkäten och sänd den tillbaka i det frankerade kuvertet.

Det är naturligtvis frivilligt att svara.

Har du några frågor ring oss gärna.

Med vänlig hälsning

Sluta-Röka-Linjen

SLUTA-RÖKA-LINJEN



RING 020-84 00 00

www.slutarokalinjen.org

1. Är du eller har du någonsin varit rökare?

- ☐ Ja
- ☐ Nej - Om nej, gå till *fråga 9* (frågor om SNUS)

2. Hur många år ungefär har du varit rökare?

- ☐ Mindre än ett år.
- ☐ 1-5 år.
- ☐ 5-10 år.
- ☐ 10-15 år.
- ☐ 15-20 år.
- ☐ Mer än 20 år.

3. Har du rökt (tagit ett halsbloss eller mer) under de senaste sju dagarna?

- ☐ Nej, inte alls.
- ☐ Ja, men inte dagligen.
- ☐ Ja, dagligen.

**4. Om du inte har rökt alls under de senaste sju dagarna
- hur länge har du varit rökfri nu?**

- ☐ Inte aktuellt – jag *har rökt* under de senaste sju dagarna.
- ☐ Jag har varit rökfri i mindre än 3 månader.
- ☐ Jag har varit rökfri i 3-6 månader.
- ☐ Jag har varit rökfri i 6-12 månader.
- ☐ Jag har varit rökfri i 12 månader eller mer.

5. Om du fortfarande röker idag, har du planer på att sluta?

- ☐ Inte aktuellt, jag är rökfri.
- ☐ Jag håller på att försöka sluta röka helt just nu.
- ☐ Jag tänker försöka sluta röka helt inom en månad.
- ☐ Jag tänker försöka sluta röka helt inom 1-6 månader.
- ☐ Jag har inga planer på att försöka sluta röka inom 6 månader.

6. Hur länge har du varit rökfri som längst i ditt liv när du har försökt sluta röka?

SVAR: ca. _____ år, _____ månader, _____ dagar

7. Hur länge har du varit rökfri som längst de senaste 12 månaderna.
Kryssa bara för ett alternativ dvs. den tid du har varit rökfri som längst,
utan avbrott de senaste 12 månaderna:

- ☐ Mindre än 24 timmar.
- ☐ 1-6 dygn
- ☐ 1-2 veckor
- ☐ 3-4 veckor
- ☐ 1-5 månader
- ☐ 6 – 11 månader
- ☐ 12 månader

8. Oberoende av om du lyckats sluta eller inte,
bidrog Sluta-Röka-Linjen till att öka din motivation till att sluta röka?

- ☐ Mycket.
- ☐ Måttligt.
- ☐ Lite.
- ☐ Inte alls.

Frågor om SNUS:

9. Är du eller har du någonsin varit snusare?

- ☐ Ja
- ☐ Nej - Om nej, gå till *fråga 17* (Övriga frågor)

10. Hur många år ungefär har du snusat?

- ☐ Mindre än ett år.
- ☐ 1-5 år.
- ☐ 5-10 år.
- ☐ 10-15 år.
- ☐ 15-20 år.
- ☐ Mer än 20 år.

11. Har du snusat under de senaste sju dagarna?

- ☐ Nej, inte alls.
- ☐ Ja, men inte dagligen.
- ☐ Ja, dagligen.

**12. Om du inte har snusat alls under de senaste sju dagarna
– hur länge har du varit snusfri nu?**

- ☐ Inte aktuellt – jag *har snusat* under de senaste sju dagarna.
- ☐ Jag har varit snusfri i mindre än 3 månader.
- ☐ Jag har varit snusfri i 3-6 månader.
- ☐ Jag har varit snusfri i 6-12 månader.
- ☐ Jag har varit snusfri i 12 månader eller mer.

13. Om du fortfarande snusar idag, har du planer på att försöka sluta?

- ☐ Inte aktuellt, jag är snusfri.
- ☐ Jag håller på att försöka sluta snusa just nu.
- ☐ Jag tänker försöka sluta snusa helt inom en månad.
- ☐ Jag tänker försöka sluta snusa helt inom 1-6 månader.
- ☐ Jag har inga planer på att försöka sluta snusa inom 6 månader.

**14. Hur länge har du varit snusfri som längst i ditt liv när du har försökt sluta snusa?
Kryssa bara för ett alternativ dvs. när du har varit snusfri som längst utan avbrott:**

SVAR: ca. _____ år, _____ månader, _____ dagar

**15. Hur länge har du varit snusfri som längst de senaste 12 månaderna?
Kryssa bara för ett alternativ dvs. den tid du har varit snusfri som längst
utan avbrott de senaste 12 månaderna:**

- ☐ Mindre än 24 timmar.
- ☐ 1-6 dygn
- ☐ 1-2 veckor
- ☐ 3-4 veckor
- ☐ 1-5 månader
- ☐ 6 – 11 månader
- ☐ 12 månader

**16. Oberoende av om du lyckats sluta eller ej, bidrog Sluta-Röka-Linjen till att öka din
motivation till att sluta snusa?**

- ☐ Mycket.
- ☐ Måttligt.
- ☐ Lite.
- ☐ Inte alls.

Övriga frågor:

17. Är du utsatt för andras tobaksrök inomhus (passiv rökning)?
Kryssa för de alternativ som stämmer för dig.

	Varje dag/nästan varje dag	Någon/några gånger i veckan	Någon/några gånger i månaden	Mindre än 1 gång i månaden	Aldrig/nästan aldrig
I ditt hem					
På jobbet					
På andra ställen					

18. Har du använt nikotinläkemedel den senaste veckan?

- ☐ Ja
☐ Nej

19. Vilket/vilka av nedanstående läkemedel har du använt efter din första kontakt med Sluta-Röka-Linjen?

- ☐ Inte aktuellt, jag har inte använt något av nedanstående läkemedel.
- ☐ Nikotin-**tuggummi** i _____ dagar, _____ månader.
- ☐ Nikotin-**plåster** i _____ dagar, _____ månader.
- ☐ Nikotin-**inhalator** i _____ dagar, _____ månader.
- ☐ Nikotin-**nässpray** i _____ dagar, _____ månader.
- ☐ Nikotin-**tablett** i _____ dagar, _____ månader.
(sugtablett/microtab)
- ☐ Zyban i _____ dagar, _____ månader.

20. Har du varit ovanligt stressad eller nedstämd under någon period efter din första kontakt med Sluta-Röka-Linjen?

- ☐ Nej.
☐ Ja.

21. Har någonting hänt i ditt liv (annat än att du har försökt sluta röka eller snusa) som kan ha orsakat din stress eller nedstämdhet?

- ☐ Inte aktuellt, jag har inte varit ovanligt stressad eller nedstämd.
☐ Nej, inte vad jag kan komma på.
☐ Ja något annat har hänt i mitt liv, än mitt rökstopp/snusstopp, som kan ha orsakat min stress eller nedstämdhet.

22. I vilken utsträckning följde du behandlaren/behandlarnas råd på Sluta-Röka-Linjen?

Försök att placera dig på skalan 1-10 genom att ringa in en siffra:

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

Inte alls

Mycket

23. Hur stort stöd/hjälp fick du av Sluta-Röka-Linjen?

Försök att placera dig på skalan 1-10 genom att ringa in en siffra:

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

Ingen alls

Mycket

24. Har det funnits någon annan än personalen på Sluta-Röka-Linjen som stöttat dig i ditt beslut att sluta röka eller snusa de senaste 12 månaderna? Kryssa för ALLA alternativ som stämmer in på dig.

- ☐ Någon i familjen.
☐ En vän (-er) / arbetskamrat (-er)
☐ Personal från hälso- och sjukvården / tandvården.
☐ Personal från apoteket.
☐ Annan professionell tobaksavvänjare.
☐ Ingen.

25. Oberoende av om du har lyckas vara rökfri eller ej, har du haft några nedanstående besvär de senaste 12 månaderna?

SYMPTOM	<i>Inget besvär</i>	<i>Lite besvär</i>	<i>Måttligt besvär</i>	<i>Mycket besvär</i>
Sug efter tobak				
Irriterad, arg				
Oro				
Koncentrationssvårigheter				
Rastlöshet				
Huvudvärk				
Svårt att sova				
Sömnighet/dåsighet				
Mardrömmar				
Nedstämdhet/deprimerad				
Blåsor/ sår i munnen				
Yrsel				
Svevningar				
Muskelvärk				
Kramper				
Förstoppning				
Andra magbesvär				
Viktuppgång				

26. Kommer du att ringa tillbaka igen till Sluta-Röka-Linjen?

- ☐ Ja, absolut.
☐ Ja, troligen.
☐ Nej, troligen inte.
☐ Nej, absolut inte.

Skriv gärna synpunkter du har om Sluta-Röka-Linjen:

Tack för du besvarar enkäten!